CURTIS'S
BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN,

WITH SUITABLE DESCRIPTIONS;

BY

SIR JOSEPH DALTON HOOKER, M.D., C.B., K.C.S.I.,

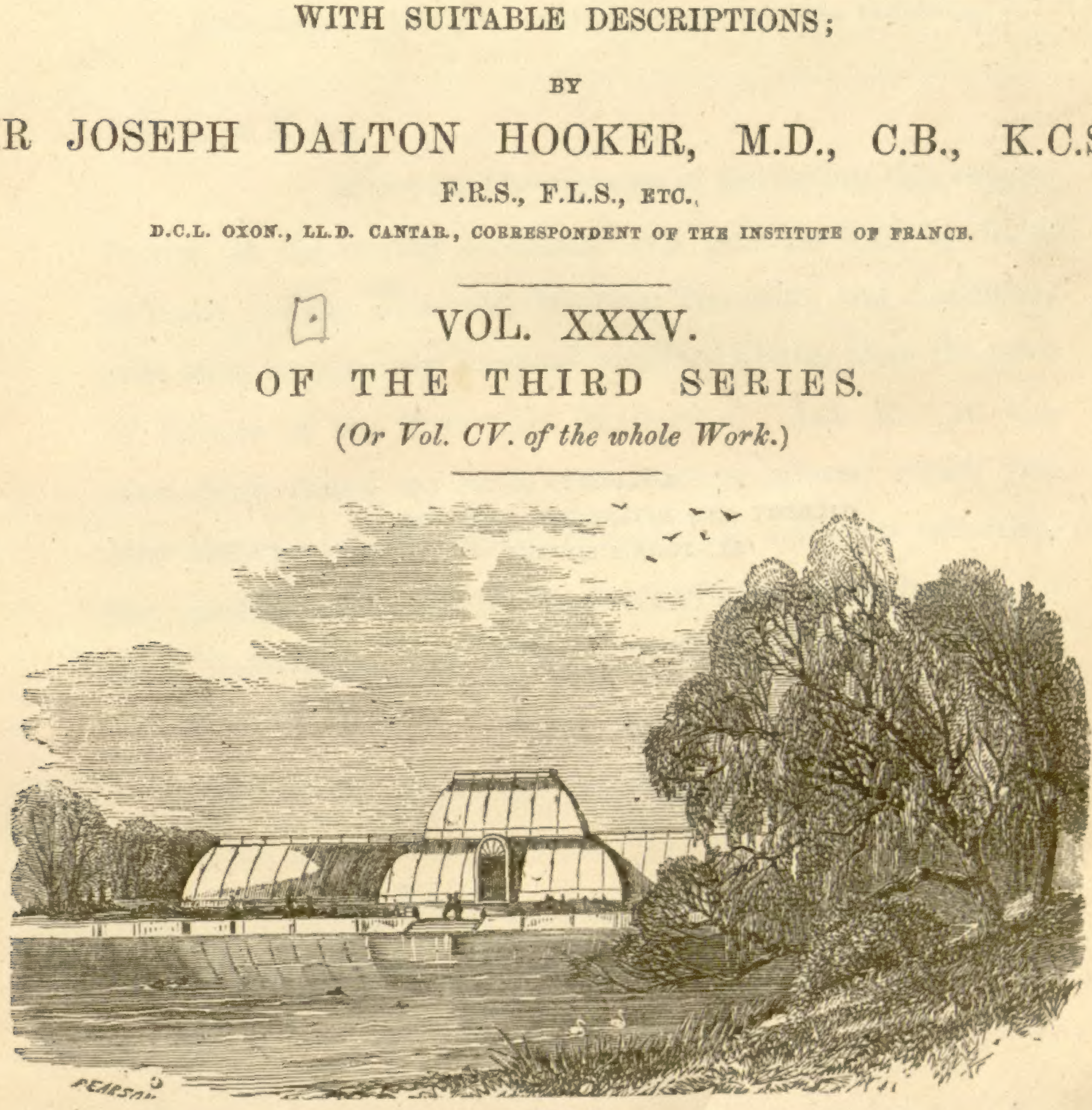
F.R.S., F.L.S., ETC.,

D.C.L. OXON., LL.D. CANTAB., CORRESPONDENT OF THE INSTITUTE OF FRANCE.

VOL. XXXV.

OF THE THIRD SERIES.

(Or Vol. CV. of the whole Work.)



"No daintie flowre or herbe that growes on grownd,
No arborete with painted blossoms drest
And smelling sweete, but there it mighte be found
To bud out faire, and throwe her sweete smels al around."—*Faerie Queene.*

LONDON:

L. REEVE AND CO., 5, HENRIETTA STREET, COVENT GARDEN.

1879.

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Mo. Bot. Garden,
1897.


SHOUT
SHARE
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ST. JOHN'S SQUARE.

TO

GEORGE KING, ESQ., M.B., F.L.S.,

SUPERINTENDENT OF THE ROYAL BOTANICAL GARDENS, CALCUTTA.

My dear King,

Allow me the pleasure of dedicating this volume to you, as the worthy successor to a position held by three eminent Indian Botanists, Wallich, Thomson, and Anderson, who have successively accepted similar tributes from the pens of Editors of the Botanical Magazine. Let me at the same time record my sense of the active interest which you have shown in the Royal Gardens of Kew, and in its offspring, the present work; and of the value of your contributions to it, to Horticulture, and to Botanical Science.

I am, my dear King,

Very sincerely yours,

J. D. HOOKER.

Royal Gardens, Kew,

Dec. 1*st*, 1879.



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F.B. del. J.N. Fitch Lith.

Vincent Brooks Day & Son Imp.

Tab. 6403.

BURBIDGEA NITIDA.

Native of Borneo.

Nat. Ord. Zingiberaceæ.—Tribe Amomæ.

Genus novum Burbidgea, *Hook. f.*

Gen. Char.— *Perianthium* exterius (calyx) tubulosum, membranaceum, ore truncato obscure 2-dentato; interius tubo gracili elongato; segmenta 3 exteriora patentia, postico orbiculato subacuto, lateralibus minoribus elliptico-lanceolatis acuminatis; interiora lateralia 0. *Labellum* parvum, erectum, antheræ antepositum, stipite antheræ æquilongo elongato, lamina oblongo-quadrata petaloidea, basi cordata, apice 2-fida. *Anthera* lineari-elongata, filamento brevi, connectivo in appendicem lanceolatam acutam lamina labello inclusam producto. *Ovarium* subcylindraceum, 3-loculare; stylus filiformis, superne inter loculos antheræ inclusus, stigmate breviter exserto parvo obliqne truncato concavo; ovula in loculis numerosa, placentis angulo interiori affixis inserta. *Fructus* elongatus, cylindraceus, coriaceus, indehiscens, 1-locularis, polyspermus. *Semina* immatura axi soluta 3-ptera inserta, erecta, fusiformia, arillo carnoso laciniato.—Herba *caulescens*, Borneensis, *habita* Hedychii, *rhizomate repente, caulibus 2-3-pedalibus erectis fasciculatis.* Folia *alterna, subcarnosa, elliptico-lanceolata, cordato-acuminata, utrinque nitida.* Flores *speciosi, in paniculas terminales dispositi, aurantiaco-coccinei, odore zingiberaceo.* Fructus 2-*pollicaris.*

B. *natida*, Hook. f.

This very beautiful plant is the type of an entirely new genus, with the habit of *Hedychium*, but with the lip reduced to a small stipitate blade, and with no lateral inner segments of the perianth. Mr. F. W. Burbidge, who discovered it when travelling in Borneo, for Messrs. Veitch, informs me that it grows in shady forests of the Murut district in N.W. Borneo, between the Lawas and Trusan rivers, at an altitude of 1,000 to 1,500 feet, in spots where there is little undergrowth; and that it thrives best where the rhizomes form matted masses on moist rocks covered with vegetable *débris*, producing ten to thirty slender flowering stems, rarely exceeding ten feet high, and each bearing a panicle of twelve to twenty flowers. The leaves are of a lively glossy green on both surfaces, and serve to set off the rich orange-scarlet-colour of the flowers. Mr. Burbidge further remarks that it is very local in its distribution, he having found it only

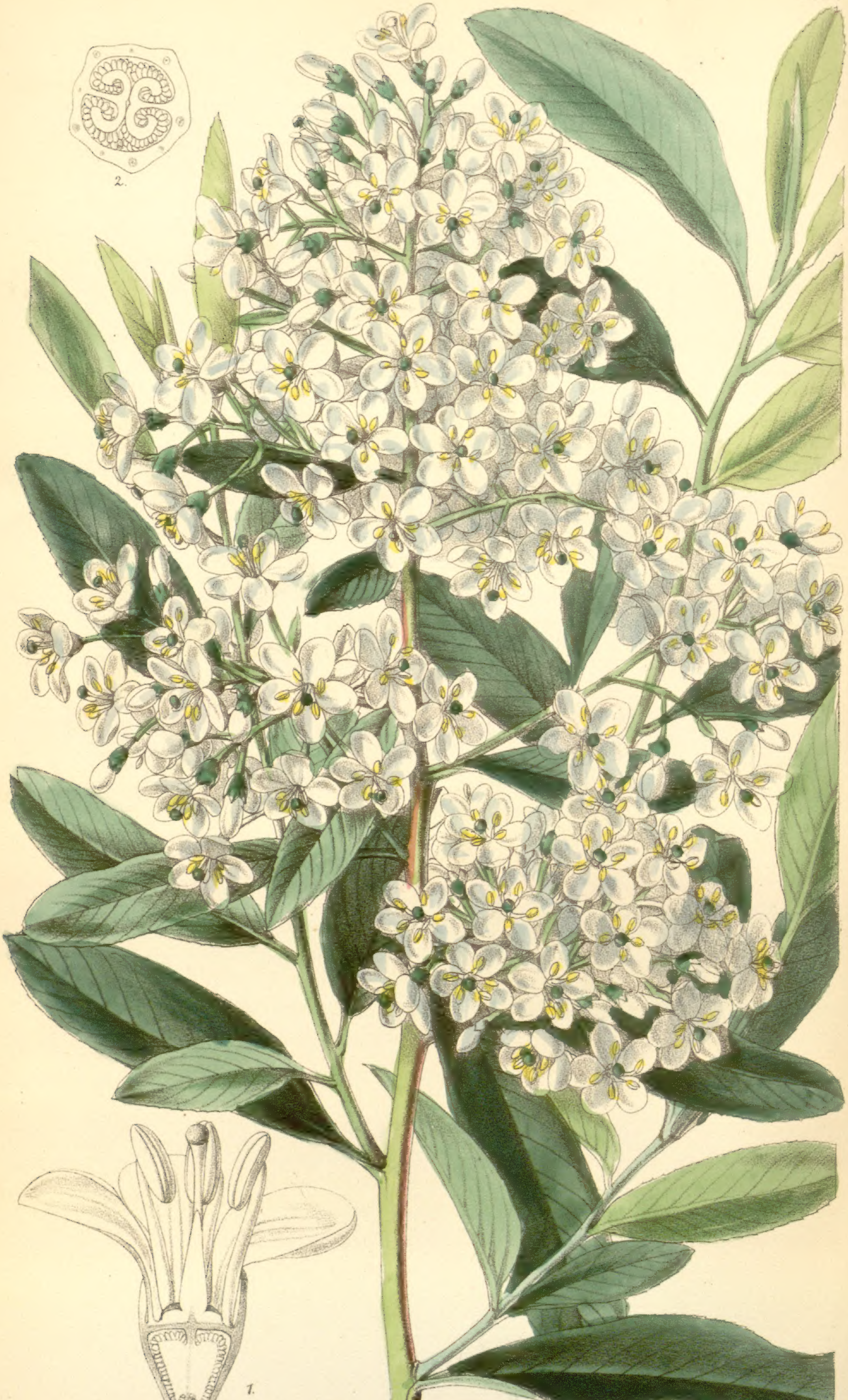
in one place, and that this restricted distribution is shared by many other Bornean plants, especially aroids; so that in a journey of even twenty miles one may pass through belt after belt of different kinds of aroids, ferns, and orchids, just as is the case in ascending a high mountain range.

I have named this interesting discovery in recognition of Mr. Burbidge's eminent services to horticulture, whether as a collector in Borneo, or as author of 'Cultivated Plants, their Propagation and Improvement,' a work which should be in every gardener's library. The drawing here given is from a sketch by Mr. Burbidge, and the analyses are from specimens which bloomed twice in Messrs. Veitch's nursery within a year after their introduction.

Descr. *Rootstocks* creeping, matted. *Stems* tufted, two to four feet high, slender, terete, leafy. *Leaves* four to six inches long; sheaths subcylindric, with short rounded auricles; blade four to six inches long, elliptic-lanceolate, caudate-acuminate, rather fleshy, bright green above, glossy on both surfaces. *Panicle* terminal, four to six inches long, many-flowered; rachis and short pedicels glabrous. *Outer perianth* (calyx) a membranous tube, truncate and obscurely two-toothed. *Inner perianth-tube* one to one and a half inch long, slender, glabrous; outer segments one and a half to two inches in diameter, bright orange-scarlet; dorsal almost orbicular, subacute; two lateral elliptic-ovate, acuminate; inner lateral segment 0. *Lip* small, erect, with a long stipes and small oblong bifid petaloid blade, which embraces the appendix of the anther. *Anther* linear-oblong, puberulous at the back; connective produced into an erect lanceolate acute appendage as long as the anther-cells, or longer. *Ovary* pubescent, three-celled; cells many-ovuled; style slender, upper part embraced by the anther-cells; stigma somewhat dilated, obliquely truncate, concave. *Fruit* slender, cylindric, two to three inches long, coriaceous, indehiscent, one-celled from the absorption of the septa. *Seeds* (unripe) fusiform, erect, attached to a central free three-winged column; aril fleshy, laciniate, almost equalling the seed.—*J. D. H.*

Fig. 1. Flower; 2, stamen and lip; 3 and 4, side and front view of anther; 5, limb of lip; 6, stigma; 7, outer perianth; 8, transverse section of ovary:—*all enlarged*.

2.



1.

A B del, J Nugent Fitch Lau.

Vincent Brooks, Day & Son Lith

TAB. 6404.

ESCALLONIA FLORIBUNDA.

Native of New Grenada.

Nat. Ord. SAXIFRAGEÆ.—Tribe ESCALLONIEÆ.

Genus ESCALLONIA, *Linn. f.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 644).

ESCALLONIA *floribunda*; glaberrima, ramulis foliisque junioribus viscosis, ramis teretibus, foliis lineari- v. obovato-oblongis obtusis minutissime denticulatis membranaceis læte viridibus subtus pallidis sparse minute furfuraceis v. glaberrimis creberrime reticulatis, cymis pyramidatis terminalibus multifloris, floribus albis ½-poll. diametro, calycis tubo obconico, limbo brevi 5-dentato, dentibus latis brevibus, petalis obovato-spathulatis patenti-recurvis concavis, filamentis robustis petala subæquantibus, stylo robusto, stigmate capitato.

E. floribunda, *Humb. Bonpl. et Kunth, Nov. Gen. et Sp. Amer.* vol. iii. p. 297; *Kunth Synops. Plant. Æquinoct.* vol. ii. p. 336; *DC. Prod.* vol. iv. p. 4; *Lodd. Bot. Cab.* t. 1772; *Reichb. Ic. Bot. Exot.* t. 202.

E. montevidensis, *DC. Prod.* vol. iv. p. 4; *Lindl. in Bot. Reg.* t. 1467.

E. floribunda, *var.* montevidensis, *Cham. et Schlecht. in Linnæa*, vol. i. p. 543.

E. bifida, *Link et Otto, Ic. Pl. Hort. Berol.* t. 23.

An ornamental free-flowering shrub, remarkable for its very wide geographical range. It was discovered by Humboldt and Bonpland in the Andes of New Grenada, at an elevation of 8,400 feet, where it has since been collected by the late Dr. Jameson, Purdie, Triana, and others; to the northward it has been found in Venezuela, on the Silla of Caraccas, at 2,500 to 4,000 feet, with smaller flowers than the New Grenada form; and to the south in Peru, whence it extends across the continent to the Rio Grande do Sul province of Monte Video. The specimens from the latter country, though originally described as a variety of *floribunda* by Chamisso and Schlechtendal, were erected into a different species by De Candolle, who was followed in this respect by Lindley. Of these authors De Candolle gives no distinctive characters, and Lindley, who gives an excellent figure of the

Monte Video plant in the *Botanical Register*, depends for its distinctive characters on its absence of viscidity, terete branches, larger fruit, more corymbose inflorescence, and longer calycine teeth; but these characters all seem to break down; Lindley himself describes the leaves of the *E. montevidensis* as covered with resinous dots beneath; the branches of *E. floribunda* are quite round, its fruit varies in size, as do its corymbs, and the calyx-teeth are identical in the two plants. The name of *E. bifida* was given to a state with leaves accidentally notched at the point. Both *E. floribunda* and *montevidensis* are cultivated in the open air at Kew, against a wall; of these the former was received from Messrs. Smith, of Worcester, and has been out for two years; the latter has been for many years in cultivation, but does not flower so freely: both flower in August.

Descr. A leafy evergreen bush or small tree, with suberect cylindric branches, and rather viscid young branches and leaves. *Leaves* two and a half to four inches long, elliptic or linear- or obovate-oblong, obtuse, rarely acute, narrowed into a slender petiole which varies from one quarter to three quarters of an inch long, margin minutely crenulate, dark green above, paler beneath with close reticulations and resinous dots or sometimes minute scurfy resinous points. *Cymes* terminal, pyramidal, much branched, three to five inches long and broad, leafy below; bracts 0 or small and linear; pedicels slender, one-sixth to one quarter of an inch long. *Flowers* one half inch in diameter, white. *Calyx-tube* broadly obconic, limb with five broadly triangular teeth. *Petals* obovate-spathulate, concave, obtuse. *Filaments* stout, equalling the petals. *Style* as long as the stamen, stigma capitate.—*J. D. H.*

Fig. 1, Vertical section of flower; 2, transverse section of ovary:—*both enlarged.*



A.B. del. J.Nugent Fitch Lith

Vincent Brooks Day & Son Lith

Tab. 6405.

NEPETA SPICATA.

Native of the Western Himalaya.

Nat. Ord. Labiatæ.—Tribe Nepetæ.

Genus Nepeta, *Linn.* (*Benth. et Hook. f. Gen. Plant.* vol. ii. p. 1199).

Nepeta *spicata;* glabra v. parce puberula v. hirsuta, caule erecto v. basi ascendente, foliis longe petiolatis late ovatis acutis v. obtusis crenatis basi cordatis v. truncatis utrinque viridibus, nervis subtus prominulis, spicis oblongis v. linearibus dense- v. laxi-floris interdum interruptis, bracteis oblongo- v. elliptico-lanceolatis subulato-acuminatis calycem æquantibus v. superantibus, calycis dentibus subulatis tubum rectum v. curvatum costatum æquantibus, corolla tubo late infundibulari calyce duplo longiore, labio superiore brevi 2-lobo, inferioris lobis lateralibus brevissimis terminali orbiculari concavo albo.

N. spicata, *Benth. in Wall. Pl. As. Rar.* vol. i. p. 64, *et in D.C. Prod.* vol. xii. p. 372.

Betonica lævigata, *Don Prod. Fl. Nep.* p. 110.

One of the commonest Himalayan cat-mints, ranging from the Kumaon to Kashmir and Murree, at elevations of 7,000 to 12,000 feet, but not found in Nepal or anywhere to the eastward of it. In its most fully developed state it forms an erect herbaceous perennial, two to three feet high, with dense spikes of bright purple flowers, three to four inches long and an inch broad, and there are sometimes five and six spikes on a branch; such is the var. *elata* of Bentham, which, however, passes gradually into the smaller and commoner form of the plant here figured. This was sent by T. Anderson Henry, Esq., from his rich herbaceous garden at Trinity, Edinburgh, where it flowered for the first time in September last. Besides its varying in stature, the bracts present all sizes, from equalling the calyx to three times that length, when the spikes appear bristly from the long exserted seta-

ceous points; the whole plant is glabrous or pubescent; the flowers vary greatly in size, and the calyx is straight or curved.

Descr. An erect or ascending branched herb, with perennial rootstock, glabrous, hirsute, or puberulous. *Stem* acutely four-angled. *Leaves* one to four inches long, broadly ovate-cordate, rarely rounded at the base, deeply serrated or toothed, bright green above, paler beneath; petiole one-half to two inches long. *Spikes* terminal, sessile or peduncled, two to four inches long, one-half to one inch in diameter, lax- or dense-flowered. *Bracts* elliptic-lanceolate, acuminate, ending in a straight subulate point, reticulate, rigid. *Calyx-tube* shortly cylindric, straight or curved, strongly nerved; lobes as long as the tube, subulate, with long straight points. *Corolla* purple, lower lip nearly white; tube twice or thrice as long as the calyx, funnel-shaped, slightly curved; upper lip short, two-lobed; lower three-lobed; side lobes very short, recurved, longer than broad; mid-lobe orbicular, concave, crenulate. *Stamens* included in the upper lip. *Stigma* with two short subulate lobes. *Nucules* small, smooth.—*J. D. H.*

Fig. *a*, flower; *b*, the same halved vertically; *c*, calyx; *d*, stigma; *e*, nucules:—*all enlarged.*



e.

a

b

d

c

A B del. J. Nugent Pitch Lith.

Vincent Brooks Day & Son Lith

Tab. 6406.

FRITILLARIA Karelini.

Native of Central Asia.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Fritillaria, *Linn.*; (*Baker in Journ, Linn. Soc.* vol. xxv. p. 251).

Fritillaria (*Rhinopetalum*) *Karelini*; bulbo globoso squamis paucis crassis, caule brevi scabro foliis 4-6 prædito, infimis lanceolatis alternis vel oppositis, superioribus linearibus alternis, floribus 2-12 cernuis in racemum dispositis, pedicellis ascendentibus brevibus, bracteis magnis foliaceis linearibus inferioribus geminis, perianthii campanulati pallide purpurei segmentis oblongis obtusis unguiculatis maculis paucis saturatioribus præditis flore expanso supra medium patulis, unguibus omnium distincte foveolatis, ungue superioris profunde saccato, staminibus perianthio duplo brevioribus filamentis subulatis scabris, stylo integro ovario duplo longiori, capsulis latioribus quam longis apice umbilicatis basi truncatis, seminibus crebris discoideis.

F. Karelini, *Baker in Journ. Linn. Soc.* vol. xiv. p. 268.

F. gibbosa, *Boiss. Diagn.* part vii. p. 107; *Walp. Ann*, vol. i. p. 852.

F. pterocarpa, *Stocks in Hook. Kew. Journ*, vol. iv. p. 180.

Rhinopetalum Karelini, *Fisch. in Edin. New Phil. Journ*, 1830, p. 19; *D. Don in Sweet Brit. Flor. Gard.* ser. ii. t. 283; *Kunth Enum.* vol. iv. p. 256; *Flore des Serres*, t. 2214; *Regel Gartenfl.* 1874 p. 161 t. 796; *Fl. Turkest.* p. 151.

R. Boissieri, *Klatt in Hamb. Gartenzeit.* vol. xvi. p. 439.

This singular plant has been known for a long time. It was sent as long ago as 1836 by Dr. Fischer, of St. Petersburg, to Mr. Anderson, of the Chelsea Botanic Garden, and was figured at the time in Sweet's British Flower Garden from the dwarf starved specimens that flowered at Chelsea. Within the last few years it has been again introduced, and has been grown successfully by several different cultivators both in Germany and in England. In a wild state it is widely diffused, as it reaches from the Ural and Altai mountains southward through Persia and Turkestan to Beloochistan and Afghanistan. It has not yet been found within the bounds of the Flora Indica. The claims of *Rhinopetalum* to be regarded as a genus distinct from *Fritillaria* rest only upon the fact that the foveole of the

upper segment of the perianth is decidedly deeper than those of the other five segments, which gives the flower a slight irregularity; but the plant is so completely a Fritillary in all other points, that when I monographed the genus I kept it up as a section only. The specimen from which our plate was drawn was communicated by Mr. G. Maw, with whom it flowered early in the month of October of last year.

Descr. *Bulb* globose, about an inch in diameter, composed of very few thick scales. *Stem* not more than four or six inches long, of which the lowest one and a half or two inches are below the surface of the soil, the upper part scabrous, as are the axis of the raceme and the margins of the leaves and bracts. *Leaves* four or six to the stem below the inflorescence, ascending, rather fleshy, glaucous, the two lowest the largest, lanceolate, alternate or opposite, the others smaller, linear, always alternate. *Flowers* from two to twelve in a close raceme, cernuous, on short, ascending pedicels, which are bracteated by linear leaves, of which there is a pair to the lower flowers. *Perianth* campanulate, under an inch long, pale purple, with darker veins and a few darker spots; segments oblong, obtuse, unguiculate, subequal, spreading from the middle when the flower is expanded, the claw of each furnished with a distinct yellowish-green foveole, that of the upper segment deeper than the others, so as to form a sort of rounded spur a twelfth or an eighth of an inch long. *Stamens* about half as long as the perianth segments; filaments scabrous, subulate, narrowed to the tip; anthers small, sub-globose or linear-oblong, basifixed. *Pistil* about as long as the stamens; style entire, twice as long as the oblong ovary. *Capsule* broader (about an inch in diameter) than long, umbilicate at the apex, truncate at the base, with a distinct neck. *Seeds* brown, discoid, packed tightly in two rows in each of the cells.—*J. G. Baker.*

Fig. 1, A flower cut in half, so as to show the spur of the upper segment; 2, pedicel, with its pair of bracts; 3, ovary, with style and stigma; 4, a single stamen; 5, an anther, shedding pollen;—*all magnified.*



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A.B.del. W.Fitch lith.

Vincent Brooks Day & Son imp

Tab. 6407.

VERONICA longifolia, *var.* subsessilis.

Native of Japan.

Nat. Ord. Scrophulariaceæ.—Tribe Digitaleæ.

Genus Veronia, *Linn.* (*Benth et Hook. f. Gen. Pl.* vol. ii. p. 964).

Veronica (Pseudolysimachia) *longifolia*; caule glabro puberulo, foliis breviter petiolatis oppositis v. 3-natim verticillatis e basi ovata v. cordata ovato- v. oblongo-lanceolatis acuminatis argute serratis, racemis solitariis v. paucis densifloris, pedicellis calyce sæpius brevioribus. *Linn. Sp. Pl.* p. 13; *Benth. in DC. Prod.* vol. x, p. 465.

Var. *subsessilis*; foliis brevissime petiolatis simpliciter serratis subtus appresse puberulis, racemorum rhachi appresse pubescente, sepalis ciliolatis. *Miquel, Ann. Mus. Lugd. Bat.* vol. ii. p. 119.

This brilliant Speedwell hardly differs, even as a variety, from the European *V. longifolia*, which ranges from Lapland, Denmark, and Lombardy, in the west, through middle Europe and N. Asia to China, and thence to the Island of Saghalien and Japan. The specimens from the latter country have been distinguished as a variety by Miquel, on account of their broader leaves, very short petioles, and sparce pubescence, but I find as broad and as shortly petioled specimens in Europe; and the leaves of some Japanese ones are narrow-lanceolate. It is further very near the common continental *V. spicata*, L., and the S. Europe and N. Asiatic *V. paniculata*, L.; and, as Bentham remarks, is connected with these by intermediate states or garden hybrids; so that it is difficult to assign the limits of the species in the widespread and beautiful *Pseudolysimachia* section of the genus to which they all belong. In cultivation the Japanese plant is a superb object, with its dense spikes of amethystine blue lucid flowers, and deep green leaves. It has been introduced by Messrs. Ware, of Tottenham, who sent the specimen here figured in August of last year.

Descr.—An erect branching undershrub, two to four feet high. *Stem* cylindrical; branches ascending, puberulous.

Leaves two to four inches long, very shortly petioled, dark green, ovate or ovate-lanceolate, acuminate, deeply acutely serrate; nerves strong and puberulous beneath. *Racemes* terminal and on lateral branches, six inches to nearly a foot long, subsessile or peduncled, strict, erect, very dense-flowered; rachis pubescent. *Bracts* linear-lanceolate. *Pedicels* about as long as the calyx. *Sepals* ovate-oblong or linear, subacute, ciliolate. *Corolla* one-third of an inch in diameter, bright amethystine blue; tube very short; segments spreading, rounded, concave, the posticous rather the largest. *Filaments* slender, exceeding the corolla-segment. *Style* filiform; stigma capitate. *Capsule* rather longer than the sepals, turgid, two-lobed.—*J. D. H.*

Fig. 1, Side, and 2, front view of the flower:—*enlarged.*


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Tab. 6408.

ECCREMOCARPUS scaber.

Native of Chili.

Nat. Ord. Bignoniaceæ.—Tribe Jacarandeæ.
Genus Eccremocarpus, *Ruiz et Pavon.* (*Benth. et Hook. f. Gen. Pl.* v. ii. p. 1050.)

Eccremocarpus (*Calampelis*) *scaber*; scandens, ramis gracilibus angulatis, ramulis petiolis et inflorescentia puberulis, v. scaberulis, foliis oppositis bipinnatis petiolo stricto rachi pinnarum flexuoso, pinnulis alternis petiolulatis oblique ovatis cordatis v. subrotundatis integris v. 2–3–lobis, cirrhis dichotome ramosis, racemis elongatis secundifloris, bracteis parvis, calycis tubo subinflato, lobis triangularibus, corollæ tubo hinc ventricoso, ore contracto, limbo parvo angusto annulari recurvo 5–lobo, antheris refractis loculis divaricatis, capsula stipitata elongato-ovoidea acuta membranacea inflata, seminibus multiseriatis ala orbiculari basi emarginato.

E. scaber, *Ruiz et Pavon, Fl. Peruv. Prodr.* p. 90; *Syst. Veg.* p. 157; *Lindl. in Trans. Hort. Soc.* vol. vii. p. 219; *Bot. Reg.* t. 939; *Lodd. Bot. Cab. t.* 1411; *DC. Prod.* vol. ix. p. 238; *Rev. Hortic.* p. 857, *Ic. Xylog.*

Calampelis scaber, *Don in Edinb. Phil. Journ.* 1829, p. 89; *Sweet. Brit. Fl. Gard.* ser. 2, t. 30; *Endlich. Iconog. Gen. Plant.* t. 95.

We take the opportunity of figuring the ripe fruit and seeds together with the flower of this old-established favourite, which has not till now found the place it should long since have occupied in the Botanical Magazine. Though originally introduced into England from Mexico in 1824 (when it was raised by Mr. Tate, of the long-abandoned Sloane Street Nursery), its native habitat is Chili, whence we have at Kew dried specimens, collected upwards of eighty years ago by the celebrated Archibald Menzies, when accompanying Capt. Vancouver in his surveying voyage to N. W. America, and when also he procured the seeds of the great tree of *Araucaria imbricata*, now growing in the Royal Garden at Kew.

The motions of the stems, leaves, and tendrils of this plant have been described by Mr. Darwin in his admirable work "On the Movements and Habits of Climbing Plants" (p. 103). He found that the internodes, leaves, and tendrils all revolved, all thus contributing their efforts towards finding support for the elongating climbing stem. Of these the internodes revolved at rates varying from $3\frac{1}{4}$ to $1\frac{1}{4}$ hours, sometimes standing still for 12 or 18 hours. The young main

petioles follow nearly the same course and rate as the internodes, but the two opposite petioles did not move together. Lastly, the tendrils, besides being carried about by the revolving petioles, themselves move spontaneously. Then, with regard to the branches of the tendrils, they are sensitive on all sides, bending in about 10 minutes after being rubbed, or after coming in contact with a support; and after such contact several branches might be seen slowly to lift themselves up, change their positions, and again come into contact with the supporting surface. The object of this latter movement is to bring the double hooks at the ends of the branches, which naturally face in all directions, into contact with the wood. Lastly, if the tendrils come into contact with a slender object, the sensitive nature of their branches (on being touched) close to the little hooks, causes them to curl round and clasp it.

Descr. A slender climber, glabrous, or with a scant scabrous pubescence, chiefly on the branchlets, petioles and inflorescence; trunk with corky bark; branches acutely angled. *Leaves* opposite, bipinnate, the main petiole stiff and angular, the secondary more flexuous, and often ending in dichotomously branched filiform circinnate tendrils; leaflets few, alternate, petiolate, one-fourth to three-fourths of an inch long, ovate-cordate or orbicular, obtuse, more or less oblique, entire or lobed. *Racemes* four to six inches long, drooping; bracts small, ovate, green; pedicels secund, a quarter to half an inch long. *Flowers* an inch and a half long. *Calyx-tube* rounded at the base, rather inflated; lobes triangular, erect. *Corolla* tubular, ventricose above the calyx on one side, suddenly contracted at the orifice; limb very short, revolute, 5-lobed. *Anthers* with divaricating lobes and glandular connective. *Ovary* oblong; style slender, stigmas two, diverging. *Capsule* pendulous, an inch and a half long, elongate-ovoid or ellipsoid, suddenly contracted into a stipes, coriaceous, wrinkled, 2-valved; placentas narrow, covered with imbricating seeds in many rows. *Seeds* one-twelfth of an inch in diameter, including the broad circular wing, which is notched at the base.—*J. D. H.*

Fig. 1, Longitudinal section of flower; 2 and 3, front and back view of anthers; 4, transverse section of ovary; 8, section of valve of capsule and placenta with seed; 6, seed:—*all but fig.* 5 *enlarged.*

M.S. del. J. Nugent Fitch, Lith.

Vincent Brooks Day & Son Imp.

Tab. 6409.

DIOSCOREA vittata.

Native of Brazil.

Nat. Ord. Dioscoreæ.

Genus Dioscorea, *Linn.*; (*Kunth, Enum.* vol. v. p. 325).

Dioscorea (*Epistemon*) *vittata*; caule gracili glabro late volubili, foliis cordato-ovatis, cuspidatis integris glabris membranaceis petiolatis, lobis basalibus brevibus rotundatis, sinu basali late rotundato, utrinque viridibus vel sæpe rubro vel albido-variegatis, floribus masculis laxe racemosis 1–3-nis breviter pedunculatis, rachibus pedicellisque pubescentibus, bracteis minutis lanceolatis, perianthio luteo-viridulo parvo, tubo brevi campanulato segmentis lineari-lanceolatis, staminibus perfectis 6 in tubo insertis segmentis duplo brevioribus, filamentis cylindricis, antheris minutis oblongis, floribus fœmineis ignotis.

D. vittata, *Hort. Bull. Cat.* no. 72 (1872), p. 21, (name only).

This is one out of several Dioscoreas which have been widely grown in our hot-houses of late years for the sake of their variegated leaves. The earliest mention of the present plant which I have found is in Mr. Bull's catalogue above cited. We have had it in the Palm-house at Kew for many years, but it never flowered till last autumn. We then found that it agreed with a plant belonging to the section Epistemon of Grisebach, which we have had in the Herbarium for a long time without any specific name, gathered by Salzmann near Bahia; the dried specimen, like the living one, representing only the staminate plant. It does not agree with any of the species described by Grisebach in the "Flora Brasiliensis," nor by Kunth in his "Enumeratio," so we have kept the name under which it has been widely distributed in cultivation.

Descr. *Stems* very slender, wide-turning, glabrous. *Leaves* cordate-ovate, entire, cuspidate, with rounded basal lobes and a broadly-rounded basal sinus three to five inches long, membranous in texture, glabrous, green on both sides, or flushed with claret-red beneath, or variegated on both sides with red and white, with about three main veins on each side of the

midrib, which extend from its base to the margins; petiole one or two inches long. *Male racemes* one to three from the axil of each leaf, three or four inches long, lax, shortly pedunculed; rachis pubescent; flowers solitary, on short pubescent pedicels, each with a minute lanceolate bract at its base. *Perianth* greenish-yellow, an eighth or a sixth of an inch long; tube short, campanulate; segments linear-lanceolate, three or four times as long as the tube. Fertile *stamens* six, inserted low down in the tube, half as long as the perianth-segments; filaments cylindrical; anthers minute, yellow, oblong. Rudimentary *ovary* present in the staminate flower. *Female flowers* and *fruit* unknown. – *J. G. Baker.*

1, A single flower; 2, a flower, opened out; 3, a stamen; 4, rudimentary ovary of the staminate flower:—*all enlarged.*



A.B. del J.Nugent Pitch Lith

Vincent Brooks Day & Son Imp

Tab. 6410.

LOASA VULCANICA.

Native of Equador.

Nat. Ord. Loaseæ.

Genus Loasa, *Juss;* (*Benth. et Hook. f. Gen. Plant.* vol. i., p. 804).

Loasa *vulcanica*; annua, setosa, erecta, foliis tripartitis, segmentis petiolulatis elliptico-ovatis obovatisve acuminatis grosse inæqualiter lobulatis et serratis, petiolulis lateralibus sæpe basi pinnulis 2–3 alternis auctis, racemis foliosis, foliis floralibus subsessilibus inferioribus tripartitis supremis integris omnibus inciso-serratis, floribus nutantibus, calycis lobis late ovatis acutis, petalis albis auguste cymbiformibus, squamis conicis aureis rubro transversim vittatis, ovario clavato.

L. vulcanica, *Ed. André, Ill. Hortic.* vol. xxv. p. 11, t. 302.

L. Wallisii, *Hort.*

M. André, who introduced this pretty plant into cultivation during his expedition to the Andes of New Grenada and Equador, states in the 'Revue Horticole' that he found it in June, 1876, forming a common branched bush on the banks of the river Pitaton, also occurring at the foot of the volcano of Corazon, on the western slope of the Andes, at an elevation of 9000 to 10,500 ft. above the sea. There are specimens in the Kew Herbarium gathered by Seemann in August, 1847, at the village of Gonzanama, also in Equador. Like the other members of its family it is covered with stinging bristles, as to which M. André remarks that the obtaining its seeds cost him "les mains bullées en mille endroits."

Loasa vulcanica grows as an erect bush to an height of two or three feet, forming a very attractive plant from the number of pearly blossoms, each with a golden eye banded with red; it is quite hardy, having flowered without protection in the herbaceous ground at Kew in September, last year. The artist of our plate, Mrs. Barnard, observed that the filaments of each bundle of stamens after having sprung towards the

centre of the petal, from their original position in the hood of the petal, became coiled up as represented in figure 7. In some other species the anthers themselves, after fertilization, became spirally coiled. The specimen figured was raised from seeds received from Mr. Thompson, of Ipswich, under the name of *Loasa Wallisii*.

Descr. An erect, much-branched, bushy, leafy herb, two to three feet high, clothed everywhere with spreading, stinging bristles. *Leaves* three to six inches broad, petioled, tripartite, the segments with long petioles, ovate, or ovate-lanceolate, or obovate, acuminate, lobulate and coarsely serrate, the lateral petiolules with two or three smaller sessile leaflets. *Racemes* leafy, six to eight-flowered, floral leaves sessile, lower trifoliolate, upper simple, irregularly serrate or laciniate. *Flowers* on slender nodding pedicels, one to one and a quarter inch in diameter. *Calyx-tube* clavate, lobes broadly ovate, acute, green. *Petals* clawed, narrowly boat-shaped, white. *Scales* broadly conical, golden yellow with transverse red bands, two-lobed at the tip; with two subulate free processes attached at its base to its inner face, their tips exserted. Bundles of *stamens* coiled inwards after discharging their pollen; anthers small, short. *Style* very slender.—*J. D. H.*

Fig. 1, Vertical section of flower; 2, 3, 4, lateral, ventral, and dorsal view of scales; 5, subulate process; 6, bundles of stamens; 7, the same after discharge of pollen:—*all enlarged.*



A.B del, J Nugent Fitch. lith

Vincent Brooks Day & Son Imp

Tab. 6411.

INULA Hookeri.

Native of the Sikkim Himalaya.

Nat. Ord. Compositæ.—Tribe Inuloideæ.

Genus Inula, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 330.)

Inula *Hookeri*; superne villosa, foliis sessilibus v. in petiolum brevem angustatis elliptico-lanceolatis acuminatis glanduloso-denticulatis membranaceis supra pilosis subtus tomentosis v. glabratis, capitulis solitariis 2½–3½ poll. diametro, involucri villosissimi bracteis elongato-subulatis recurvis demum squarroso-patentibus, ligulis perplurimis 1–seriatis pallide flavis angustis elongatis recurvis, acheniis minutis glabris sulcatis, pappo sordide albo.

I. Hookeri, *C. B. Clarke, Compos. Indicæ*, p. 122.

A very free-flowering perennial, with leaves of a remarkably delicate membranous texture and faintly sweet-scented flowers. Unfortunately it withers rapidly after being cut, so that it can be of little use for decorative purposes except in the garden. It is a native of rocky places and the interior valleys of Sikkim, at elevations of 7,000 to 10,000 feet, where it replaces the very similar *I. barbata*, Wall., of the western Himalaya. Both these closely resemble the *I. grandiflora*, Willd. and *I. glandulosa*, Willd. which are natives of the Caucasus, and the former of which is enumerated by Mr. C. B. Clarke a native of the western Himalaya also. All these species are, like *I. Hookeri*, remarkable for the glands which terminate at the teeth on the margins of the leaves, and all have narrow finally squarrose involucral bracts, covered with long shaggy hair.

Inula Hookeri was introduced into cultivation in Kew by seeds sent by myself from Sikkim in 1849, which flowered in 1851; and specimens from which are preserved in the Kew Herbarium. It was again raised two years ago from seeds sent by M. Gammie also from Sikkim, and from which plants the accompanying drawing was made in September of last year.

Descr. Fibrous, with soft hairs, which become tawny

when dry. *Rootstock* perennial. *Stems* one to two feet high, sparingly branched, slender, angled, pubescent below, villous above. *Leaves* three to four inches long, sessile, or narrowed into very short petioles, oblong-lanceolate, acuminate, base acute, minutely toothed, the teeth tipped with a globose gland, hairy above, usually tomentose beneath, very membranous, bright green. *Heads* two and a half to three and a half inches in diameter, shortly peduncled, terminating leafy branches. *Involucre* very broad, shaggy; bracts elongate, linear-subulate, spreading and recurved, finally squarrose. *Flowers of the ray* very numerous (about 35), with slender spreading pale-yellow ligules an inch and more long; ligule slightly hairy towards the base, obtusely three-toothed at the apex. *Disc* flowers very numerous. *Receptacle* convex, papillose. *Anthers* with slender tails. *Achenes* very small, deeply grooved. *Pappus hairs* in one series, dirty-white.—*J. D. H.*

Figs. 1 and 2, Outer and inner involucral bracts; 3, receptacle; 4, the same cut vertically; 5, corolla of the ray; 6, young achene of the ray crowned with the base of an accessory foliaceous appendage; 7, style-arms of ray-flower, 8, flower of disc; 9, stamen; 10, its style-arms; 11, pappus hair:—*all enlarged.*









H.T.D. del. J. Nugent. Pitch Lith.

Vincent Brooks Day & Son Imp.

CUPHEA LANCEOLATA.

Native of Mexico.

Nat. Ord. Lythrarieæ.—Tribe Lythreæ.

Genus Cuphea, *P. Br.*; (*Benth. et Hook. Gen. Pl.* vol. i. p. 778).

Cuphea *lanceolata*; glanduloso-pubescens et viscosa, caule erecto stricto, foliis oppositis et alternis petiolatis ovatis v. ovato-lanceolatis obtusiusculis, floribus axillaribus solitariis pedicellatis deflexis, pedicellis 2-bracteolatis, bracteolis parvis, calycis tubo elongato imo basi gibbo infra orem antice inflato lobo dorsali triangulari ovato erecto, ceteris brevissimus acutis sinubus penicillis villorum auctis, filamentis brevibus longe lanatis, antheris oblongis, ovario lanceolato glabro disci processu linguæformi basi stipato.

C. lanceolata, *Ait. Hort. Kew.* ed. 2, vol. iii. p. 150; *Kunth, Nov. Gen. et Sp.* vol. vi. p. 605; *DC. Prod.* vol. iii. p. 85; *Don in Sweet. Brit. Fl. Gard.* vol. vii. t. 402; *Regel, Gartenfl.* 1864, p. 33, t. 424.

C. Zimpani, *Roezl*, MS.

This belongs to the same section of the large genus *Cuphea* as the old *C. silenoides*, Nees (Tab. nost. 4362), but is a taller-growing, more erect, and much handsomer plant, with strict (not flexuous) branches, longer calyx-tubes, and much larger flowers. Regel, indeed, in the 'Gartenflora,' reduces *C. silenoides* to a variety of this, but the habit and other characters of the two are so different that I do not feel justified in adopting this conclusion, especially after observing them growing side by side.

Cuphea lanceolata was introduced into English cultivation as long ago as 1796, by Mr. Anderson, then curator of the famous Apothecaries' garden at Chelsea, but was soon lost, no doubt from its having been treated as a stove plant, as directed in the 'Hortus Kewensis.' It was reintroduced at Hamburgh in about 1835, by Messrs. Booth, and was flowered

in England as a hardy plant by Messrs. Osborne, of Fulham soon again to be suppressed in England in the rage for new things and neglect of any hardy herbaceous plants but the gaudy "bedding-out stuffs." It, however, held its place on the continent, from whence seeds were received at Kew some years ago. It flowers annually in the herbaceous grounds, and has a very handsome appearance in September and October, presenting in its robust habit and erect growth, larger, deeper-coloured petals, with no pale border, a marked contrast to the half prostrate flexuous-stemmed *C. silenoides.*

Descr. An erect, straight, viscidly glandular-pubescent annual, three to four feet high; branches stout, erect, purplish green. *Leaves* half an inch to three inches long, opposite and alternate, petioled, ovate or ovate-lanceolate, obtuse, quite entire, membranous, soft, bright green. *Flowers* axillary, solitary, pedicelled, deflexed; pedicels one-third to one half an inch long, purple, 2-bracteolate, bracteoles alternate, green, small. *Calyx* an inch long, tubular, gibbous at the very base above, and swollen below the throat below, ten-nerved, purple, very viscid; upper lobe triangular-ovate, erect; four others very small, spreading or recurved, broadly triangular, acute, with a tuft of villous hairs in the sinus between each. Four dorsal *petals* three-quarters of an inch in diameter, orbicular, clawed, fine maroon purple with pale veins; four other petals very small, orbicular, paler. *Stamens* hardly exserted from the throat of the calyx, filaments short, densely woolly above the middle; anther oblong. *Ovary* lanceolate, with a slender straight style, attached at its base to the recurved tongue-shaped disk. *Capsule* included in the sub-erect calyx-tube, ovoid, many-seeded.—*J. D. H.*

Fig. 1, Vertical section of flower; 2, front, and 3, side view of calyx; 4 and 5, stamens; 6, ovary and disk; 7, capsule burst open; 8, seed-bearing axis; 9, seed: —*all enlarged.*



M.S del. J.Nugent Fitch Lith

Vincent Brooks Day & Son Imp

Tab. 6413.

ANEMONOPSIS macrophylla.

Native of Japan.

Nat. Ord. Ranunculaceæ.—Tribe Helleboreæ.

Genus Anemonopsis, *Sieb. et Zucc.* (*Benth. et Hook. f. Gen. Plant.* vol. i. p. 8).

Anemonopsis *macrophylla;* elata, glaberrima, caule ramisque gracilibus rigidis flexuosis cylindraceis purpurascentibus, foliis amplis bi- tri-ternatis, petiolis petiolulisque gracilibus rigidis, foliolis ovato- v. elliptico-lanceolatis grosse irregulariter subduplicatim serratis acutis v. acuminatis, intermedio petiolulato, lateralibus sessilibus, racemis laxifloris, floribus longe pedicellatis nutantibus, bracteolis pedicello et rachi parvis lanceolatis v. trifidis viridibus, floribus diametro sesquipollicaribus pallide lilacinis, sepalis 3 exterioribus concavis dorso saturate fusco-purpureis.

A. macrophylla. *Sieb. et Zucc. Fl. Jap. Fam. Nat.* sect. 1, p. 75; *Walp. Ann.* vol. i. p. 155.

Though described upwards of thirty years ago, this highly remarkable plant has until recently been little known to botanists; nor until very lately has it been brought under cultivation. It was discovered in North Japan by the Dutch traveller and naturalist, Siebold, and described by him and his coadjutor in publication, Zuccarini, in the Transactions of the Bavarian Academy of Sciences about 1847. Since then it has been collected by Tchnonoski in 1864, and specimens communicated by him to Maximovicz, the very learned Russian botanist, who spent many years in the exploration of the Japanese Archipelago, and by whom magnificent dried specimens were sent to Kew. From these the details of the fruit and seeds are given in the accompanying plate.

Anemopsis is a near ally of *Cimicifuga*, differing in its very large anemone-like flower, and in the shape of the petals; it consists of but one species. The plant from which our figure was made flowered on the rock-work at Kew in July of last year.

February 1st, 1879.

Descr. An erect perennial herb, two to three feet high, everywhere quite glabrous, smooth and shining. *Stem* wiry, rigid, cylindrical, of a dirty-purple colour, flexuous, simple. *Leaves* on very long petioles, eight to ten inches broad, triangular in outline, biternately compound; petiole of the lowermost leaf a foot long, sheathing at the very base; partial petioles very slender, lateral divaricating; leaflets two to four inches long, ovate or ovate-lanceolate, cuneate at the base, unequally incised-serrate or toothed, the teeth apiculate, terminal petiolulate, lateral sessile. *Flowers* one and a half inch in diameter, drooping or inclined, in lax few-flowered racemes, or the lowest flower axillary; bracts on the rachis and pedicel small, green, rigid, lanceolate, or two to three-fid; pedicels two to four inches long, curved. *Sepals* about nine, concave, spreading, the three outer dirty-purple externally, internally a pale lilac, as are all the rest and the petals. *Petals* about twelve, erect, strongly imbricating in several series, about one-third the length of the sepals, linear-oblong, rather contracted downwards, tip rounded, thickened towards the base on the middle of the inner face. *Stamens* numerous, filaments filiform; anthers narrowly oblong, connective much thickened at the back, and produced into a point; cells adnate, linear, opening in front. *Carpels* 3, erect, subulate, ending in slender erect styles; ovules very numerous, two-seriate. *Fruit carpels* two, stipitate, sharply deflexed, obtuse, falcate, membranous, much compressed, with the stigma lateral, about ten-seeded. *Seeds* oblong; testa covered with membranous quadrate scales radiating especially from the margins; albumen copious; embryo minute, cotyledons short oblong, radicle subglobose.—*J. D. H.*

Fig. 1, Petal; 2, stamens; 3, carpels; 4 and 5, the same cut vertically and transversely; 6, follicles; 7 seed; 8 and 9, the same cut transversely and vertically; 10, embryo:—*all enlarged.*



H.T.D. del. J.N Fitch Lith

Vincent Brooks Day & Son imp

Tab. 6414.

EUCHLÆNA luxurians.

Native of Guatemala.

Nat. Ord. Gramineæ.—Tribe Olyreæ.

Genus Euchlæna, *Schrader*; (*Meissn. Gen. Pl.* vol. ii. p. 319.)

Euchlæna *luxurians*; glabra, culmis robustis elatis dense fasciculatis simplicibus erectis foliosis, foliis 3–4-pedalibus elongato-lanceolatis longe acuminatis planis junioribus marginibus cartilagineo-serrulatis multinerviis lævibus, ligula brevi membranacea integra v. fissa, spiculis ♀ in spicas terminales unilaterales subcorymbosim fasciculatis dispositis 2-floris, glumis vacuis scaberulis ovato-lanceolatis exteriore multinervi glumis floriferis paleis angustioribus floris inferioris 3–nervi superioris 1–nervi, lodiculis subquadratis carnosulis margine superiore crenato, spiculis ♀ in spicas elongatas alternatim dispositis et in cameris racheos profundere cavati.

E. luxurians, *Durièu de Maisonneuve et Ascherson in Bull. Mens. Soc. Linn., Paris*, No. 14, p. 105 (January, 1877).

Reana luxurians, *Durièu in Bull. Soc. d'Acclim.*, Ser. 2, vol. ix. p. 581 (1872).

Few fodder grasses have of late years attracted more attention than the magnificent plant here figured, whether for its supposed value or for its botanical interest. The first notice of it is contained in an interesting article communicated by the late M. Durièu de Maisonneuve (Director of the Botanical Garden at Bordeaux) to the Acclimatation Society of France in 1872, which states that the author received the seeds from the Society about four years previously under the name of *Teosinté*, and as coming from Guatemala. From experiments made with it in Bordeaux, Collioure, and Antibes, he pronounced it to be a plant of *d'une végétation prodigieuse*, every seed producing about 100 stems, and these attaining 10 feet in height, but as incapable of flowering in these localities, and as cut down by the first frosts. From imperfect flowers produced at Antibes, he refers it to the genus *Reana*, which is a synonym of *Euchlæna*, as pointed out by Ascherson in the paper quoted under the specific character. Latterly this grass has been successfully cultivated at Cairo, from whence we have received excellent specimens and seeds from Dr. Schweinfurth, and its valuable properties as a fodder grass have been abundantly verified. Seeds of it have been distributed both from Kew and from Cairo, to Cyprus, and the East and West Indies, Australia, and tropical Africa.

In a botanical point of view *Euchlæna* is a most inter-



H.T.D del. J.N. Fitch Lith.

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Tab. 6415.

MONNINA xalapensis.

Native of Mexico.

Nat. Ord. Polygaleæ.

Genus Monnina, *Ruiz et Pav.*; (*Benth. et Hook. f. Gen. Pl* i. p. 139.)

Monnina *xalapensis*; fruticosa, glaberrima v. ramulis et inflorescentia pubescente, ramulis strictiusculis angulatis, foliis elliptico- v. obovato-lanceolatis v. oblanceolatis acuminatis in petiolum brevissimum longe angustatis membranaceis nervis obscuris, racemis terminalibus et axillaribus simplicibus v. terminalie basi ramosi sepalis exterioribus late ovatis obtusis interioribus oblique semiorbicularibus concavis mulloties minoribus, carina galeata 3–loba, lobis rotundatis margine, anticovilloso, petalis interioribus columnæ stamineæ adnatis superne in appendicem cochleatan productis, ovario 1–loculari, stigmate apice dilatato truncato, drupa ellipsoidea utrinque acuta exalata.

M. xalapensis, *H. B. et K. Nov. Gen. et Sp.* vol. v. p. 314; *Kunth Synops. Pl. Æquinoct.* vol. iii. p. 320; *DC. Prod.* vol. i. p. 339; *Benth. Pl Hartweg*, p. 10; *Masters in Gard. Chron.* 1879, p. 50.

Hebeandra euonymoides, *Bonpl. in H. B. K.*, etc. p. 42.

Apparently a common and variable Mexican plant, at an elevation of 3000 to 4000 feet, where it was discovered by Humboldt and Bonpland. It forms an evergreen shrub or small tree, conspicuous for its bright green foliage and copious racemes of blue flowers. The genus, which is a large one, containing some fifty species, is confined to South America, and is allied to *Polygala*, differing in the arrangement of the petals and the indehiscent fruit; one has been already figured in this work, the *M. obtusifolia* of Peru (Tab. 3122).

I am indebted to Lady Dorothy Nevill for the specimen here figured, which flowered in the gardens of Dangstein in October last. It is, I fear, the last plant that will be figured from that noble private collection, which is shortly to be broken up, to the deep regret of all lovers of botany and horticulture.

Descr. An evergreen slender shrub or small tree, glabrous or more or less pubescent, or even tomentose on the branchlets and inflorescence; branches angled, compressed above.

March 1st, 1879.

Leaves very variable in size and shape, two to four inches long, elliptic and equally narrowed to both ends, or obovate-lanceolate, or oblanceolate, acute or acuminate, quite entire, always gradually narrowed below into a very short petiole, which is jointed on to a prominence of the branches; membranous, flat; nerves obscure. *Racemes* one to three inches long, axillary and terminal, erect, simple, and the terminal one rarely branched at the base; bracts minute, ovate, very deciduous; pedicels very short. *Flowers* about one-fourth of an inch in diameter, bright blue. *Sepals*, three outer short, pubescent, ovate, obtuse; two inner very large, obliquely semicircular, very concave, with a sub-acute point and straight lower edge. *Petals*, three outer forming a 3-lobed hood over the stamens, lobes obtuse; two inner adnate to the staminal column, and terminating upwards in a spoon-shaped appendage. *Ovary* oblong, 1-celled, with a prominent gland at its base; style very thick, bent at right angles, and terminating in a dilated truncate stigma. *Fruit*, a drupe one-fourth of an inch long, ellipsoid and acute at both ends.—*J. D. H.*

Fig. 1, Flower with one inner sepal removed; 2, the same viewed from the other sides; 3, flower with both inner sepals removed; 4, staminal column and inner petals; 5, stamen; 6, pedicel and ovary; 7, transverse section of ovary: —*all enlarged.*



H.T.D. del. J Nugent Fitch, Lith

Vincent Brooks Day & Son Imp

Tab. 6416.

CROCUS VITELLINUS.

Native of Syria and Asia Minor.

Nat. Ord. Iridaceæ.—Tribe Ixieæ.

Genus Crocus, *Tournef.*; (*Baker in Journ. Linn. Soc.* vol. xvi. p. 79.)

Crocus *vitellinus*; hyemalis, tunicis exterioribus brunneis in fibras parallelas deorsum dissolutis, spathâ basali nullâ, foliis 5–6 synanthiis anguste linearibus albo vittatis, spathâ propria diphylla, perianthii tubo citrino 2–3-pollicari, fauce concolori glabro, limbi aurei concoloris subpollicaris segmentis oblongo-spathulatis, antheris citrinis filamento glabro subæquilongis, styli fulvo-lutei ramis permultis capillaceis divaricatis.

C. vitellinus, *Wahlenb. in Isis*, vol. xxi. p. 106; *Baker in Gard. Chron.* 1873, p. 680; *in Journ. Linn. Soc.* vol. xvi. p. 84.

C. syriacus, *Boiss. et Gaill. in Boiss. Diagn.* ser. 2, vol. iv. p. 94.

C. Balansæ, *J. Gay in Balans. Pl. Orient. Exsic.* anno 1854, No. 34.

Var. *syriacus*; limbi segmentis dorso atro lineatis. (tab. nostr. fig. 3.)

C. syriacus, *Baker in Gard. Chron. et Journ. Linn. Soc. loc cit.*

C. lagenæflorus var. (?) syriacus, *Herb. in Journ. Hort. Soc.* vol. ii. p. 282.

This is the only yellow-flowered Crocus of the section with a much-divided style. It is an inhabitant of Syria and Asia Minor, and now that we possess a fuller supply of material it seems clear that, as was first suggested by Mr. G. Maw, *syriacus* and *vitellinus* are only two forms of one and the same species, one with a striped, and the other with a concolorous perianth-limb. We have the type from several places on the western slope towards Saida and Beyrout of the Lebanon range, where it was discovered by a Swedish traveller called Berggren in 1820, and also from the neighbourhood of Smyrna,* where it was found by Balansa in 1854. Of the striped variety there is a specimen in the Banksian herbarium, gathered about Aleppo a hundred years ago by Dr. Russell, and it has been lately refound in the same neighbourhood by Dr. Haussknecht, and in the Cilician Taurus, by Mr. and Mrs. Danford. The plant flowers from November to March

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* Mr. G. Maw, who has also gathered this, thinks it may prove a distinct species, as although growing at a low level it flowers as late as March.—See *Gard. Chron.* 1879, p. 234.

and is still rare in English gardens. The material for the drawing of the type was a specimen in the Kew collection, presented by Mr. G. Maw; and of the striped variety a plant sent up by the Rev. H. Harper Crewe, who obtained it from M. Chapellier, of Paris.

DESCR. *Corm* ovoid, middle-sized, the firm, brown outer tunics splitting up more or less into parallel fibres towards the base. Corm producing one to three buds, of one to five flowers each, the top of the flower five or six inches from the top of the corm. *Basal spathe* obsolete. *Leaves* five or six to a bud, quite cotemporary with the flowers, narrow, glabrous, with revolute edges and a distinct white central band. *Proper spathe* of two valves. *Perianth* tube filiform, pale yellow, two or three inches long; limb about an inch long, orange-yellow, its oblong spathulate segments concolorous in the original *vitellinus*, striped with five feathered lines down the back in the variety *syriacus*, and in a third form plain orange with an obscurely lineate, brownish blotch at the base; throat glabrous, concolorous. *Anthers* lemon-yellow, about the same length as their filaments. *Styles* fulvous, cut up into numerous diverging capillary branches.—*J. G. Baker.*

Fig. 1, A plant of var. *syriacus*; 2, its style branches, *magnified*; 3, a plant of typical *C. vitellinus*:—*natural size.*

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H.T.D. del, J.Nugent Fitch, Lith.

Vincent Brooks Day & Son Lep.

Tab. 6417.

COTYLEDON RAMOSISSIMA.

Native of South Africa.

Nat. Ord. Crassulaceæ.

Genus Cotyledon, *Linn.*; (*Benth. & Hook. f. Gen. Pl.* vol. i. p. 659.)

Cotyledon (Paniculatæ) *ramosissima*; fruticosa, glaberrima, glaucescens, foliosa, ramosissima, caule crasso erecto, ramis ramulisque confertis patentibus cylindraceis annulatim cicatricatis, foliis confertis breviter petiolatis obovato-orbiculatis subacutis v. breviter cuspidatis concavis integerrimis dure carnosis purpureo-marginatis glauco-viridibus, floribus ad apices ramulorum solitariis pedicellatis cernuis sesquipollicaribus, calycis brevis dentibus acutis sinubus latis rotundatis, corolla campanulata cylindracea viriscente lobis brevibus recurvis pallide sanguineis, filamentis corollæ tubo basi adnatis antheris exsertis, carpellis gracilibus, ovariis antice planis, basi squamis cucullatis adnatis.

C. ramosissima, *Haw. suppl.* p. 25; *DC. Prodr.*, vol. iii. p. 396; *Harv. & Sond. Fl. Cap.*, vol. ii. p. 372.

A native of the interior districts of South Africa, as at Uitenhage, George, the Zwartkops river, where it forms a bush from one to three feet high, remarkable for its density, bushy and leafy habit, and the pale glaucous green of the foliage and young parts. It is very closely allied to the beautiful *C. orbiculata* of this Magazine (Tab. 321), differing in habit and wanting that snowy glaucous hue of that plant, but remarkably similar in form and size of the flower. Though referable to the section with panicled flowers in all other respects but this, the flowers are in all our specimens, living and dried, solitary at the tips of the branchlets.

Cotyledon ramosissima has been long cultivated at Kew, and all trace of its introduction is lost, though this must have been since the date of the publication of the second edition of the "Hortus Kewensis," namely 1811, in which work it is not described; it was, however, discovered soon after that date (in 1813) by Burchell, whose specimens are at the Kew Herbaries. The Kew plant for which the accompanying figure was made was sent by Mr. McGibbon, of the Cape-town Botanical Gardens, and flowered in the month of September.

Descr. A bushy, succulent, much branched, erect shrub,

one to three feet high ; branches cylindric, annulate, covered with an ashy bark. *Leaves* crowded, opposite, three-quarters to one inch long, orbicular, obovate, subacute or cuspidate, concave, densely fleshy, quite entire, nerveless minute glaucous furpuraceous scales, derived from the dead upper cells of the epidermis, margins dull purple. *Flowers* solitary at the tips of the branchlets, drooping, an inch and a half long ; peduncle curved, naked, shorter than the flower, swollen in a top-shaped manner beneath the calyx. *Calyx-tube* short, cupular ; teeth five, very short, triangular, acuminate, appressed to the corolla, separated by a broad shallow rounded sinus. *Corolla* much larger than the calyx, fleshy, campanulate ; tube pale glaucous-green, cylindric or obscurely angular, lobes one-third the length of the tube, spreading, ovate, acute, thick, glabrous. *Stamens* ten, filaments long, much thickened and pubescent at the base, where they are united into a ring which is attached to the corolla near its base ; this ring projects in the cavity of the corolla and forms at its base a chamber which probably catches the nectar secreted by the glands at the base of the carpels, which would otherwise escape from the pendulous flower ; anthers exserted. *Carpels* slender, tapering into filiform styles ; ovary flat on the back, adnate below the horizontal fleshy cucullate hypogynous glandular scales.—*J. D. H.*

Fig. 1, Vertical section of flower ; 2, portion of corolla laid open, and stamens showing the chamber formed by the shortened bases of the filaments ; 3, bases of carpels and scales ; 4, transverse section of carpel :—*all enlarged.*



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HTD del J Nugent Fitch, Lith

Vincent Brooks Day & Son Lith

Tab. 6418.

CARLUDOVICA ensiformis.

Native of Costa Rica.

Nat. Ord. Cyclantheæ.

Genus Carludovica, *Ruiz et Pav.*; (*Endl. Gen. Plant.*, p. 242).

Carludovica *Ensiformis*; 2–3-pedalis, subacaulis, foliis distichis longe petiolatis ad basinfere bipartitis, segmentis ensiformibus 1½ poll. latis acutis 4-nerviis coriaceis planis, petiolo subcylindrico antice sulcato, marginibus sulci membranaceis basin versus scariosis imo basi vaginantibus, pedunculo 2–3-pollicari nutante v. suberecta, spathis ad 3–4-pollicaribus lanceolatis longe acuminatis cymbiformibus extus brunneis intus albis caducis, spadice oblongo 1½-pollicari, fl. ♂ perianthii lobis ad 12 brevibus oblongis obtusis carnosis suberectis v. recurvis, staminibus perplurimis confertis filamentis e basi mamillari gracilibus brevissimis, antheris oblongis connectivo apici in papillam producto, fl. ♀ perianthii lobis erectis quadratis angulis rotundatis margine superiore undulato.

The members of the very curious natural family of *Cyclantheæ* are all tropical American, and are very little known, although one of them, the *Carludovica palmata*, of New Grenada, is the plant from the leaves of which the famous Panama hats, cigar cases, and other similar plaited fabrics, so celebrated for their fineness, durability, lightness, and flexibility, are made. Only two genera of this Order are known, *Carludovica* and *Cyclanthus*, and about a dozen described species: they are closely allied to the *Aroideæ* and *Pandaneæ*, and, as with these, some are scandent, their stems adhering to the branches of lofty trees by adventitious roots, and others are, like the one here figured, stemless and terrestrial. One of the species of *Carludovica* only has been figured in this Magazine, namely, *Ludovia latifolia* (Tab. 2950-1). The name *Ludovia* was substituted by Persoon for the original one, *Carludovica* (of Ruiz and Pavon), on the ground of the barbarity of so latinizing the conjoint names of Charles XI. of Spain and his Queen Louisa, after whom the genus was so called. As however, in so many other cases, euphony has carried the day over classical rules and the laws of botanical nomenclature, for *Carludovica* has wholly superseded *Ludovia* amongst botanists.

March 1st, 1879.

This curious plant was imported from Costa Rica a good many years ago, and flowered for the first time in June, 1874. Our drawing was, however, made on a subsequent occasion, namely, in August, 1877.

Descr. *Stem* very short or none. *Leaves* three to four pairs, distichous, long petioled; two to three feet long; blade divided nearly to the base into two divergent, ensiform, acute, or scarcely acuminate, flat, coriaceous, 4-nerved divisions; nerves very prominent; nervules obscure; entire portion two to four inches long, with an acute sinus, the margins produced downwards on to the petiole, which is a foot or more long, rather slender, cylindric above, compressed below, with a deep frontal groove; margins of the groove membranous and overlapping, the membrane becoming broader, scarious, and sheathing below. *Peduncle* three to four inches long, erect or inclined, cylindric; spathes four, spreading, three inches long, lanceolate, long acuminate, boat-shaped, brown externally, white within. *Spadix* shortly oblong, one and a half inches long, obtuse. *Flowers* densely crowded. *Males* with an obconic base and about twelve broadly oblong, fleshy, suberect, or recurved obtuse short lobes in one series. *Stamens* very numerous, each seated on a globose fleshy mamilla or base of the filament, which above it is very short and slender. *Anthers* oblong, tipped with a globose production of the connective. *Females* with four almost quadrate, erect, or incurved fleshy perianth lobes, and four filiform staminodes three and a half inches long, one opposite to and at the base of each segment.—*J. D. H.*

Fig 1, Female flower seen from above with the staminodes removed; 2, male flower; both *enlarged;* 3, head of unripe fruit of the *natural size.*



A. E. del. J. N. Fitch, Lith

Vincent Brooks Day & Son Imp

Tab. 6419.

COREOPSIS NUDATA.

Native of the Southern United States.

Nat. Ord. Compositæ.—Tribe Helianthoideæ.

Genus Coreopsis, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* v. ii. p. 385.)

Coreopsis *nudata*; gracillima, glaberrima, caule erecto tereti dichotome ramoso, foliis paucis, radicalibus elongato filiformi-subulatis cylindraceis longe acuminatis caulinis sparsis subulatis brevibus, capitulis amplis, involucri parvuli bracteis exterioribus brevibus recurvis late oblongis obtusis, interioribus oblongo lanceolatis apices versus acutatis, floribus radii ad 8 limbo late obovato apice obtuse 2–4-lobo roseo v. purpureo, fl. disci flavis dentibus recurvis papillosis, acheniis quadrato-oblongis hispidulis anguste alatis acutis brevibus ciliatis.

C. nudata, *Nutt. Gen.* vol. ii. p. 180; *et in Trans. Amer. Phil. Soc.* New Ser. vol. vii. p. 360; *Torr. & Gr. Fl. N. Am.* vol. ii. p. 348; *DC. Prodr.* vol. vii. p. 574; *Chapm. Fl. S. United States*, p. 236.

Calliopsis nudata, *Spreng. Syst. Veg.* vol. iii. p. 611.

A singularly beautiful plant, with the foliage of a rush, and the flower of a small Dahlia, or of a very large Anemone of the *Japonica* group; a native of swamps and ponds in the pine-barrens near the coast of the Southern United States from Georgia to Florida. It has been referred to a small section of the genus, to which the name of *Cosmella* has been given; but which appears to be a purely artificial group. The root is almost tuberous, and the leaves like those of a very slender rush, they are stated to be fistular in a note attached to dried specimens communicated by the late Dr. Torry, but they are certainly solid in the specimens cultivated at Kew.

The seeds of *Coreopsis nudata* were received from Professor Asa Gray, and were sown in a pan of moist soil in a warm pit, the plants thus raised flowered in the open air in September of last year.

Descr. A tall very slender glabrous perennial marsh or

pond plant; root-stock short, stout, almost tuberous, emitting stout fibres. *Stems* two to four feet high, very graceful, simple below, sparingly dichotomously branched above, the branches terminating in single heads. *Leaves* very few; radical erect, very slender, rush-like, with short bases that sheath the very base of the stem, quite terete and smooth, purplish green; cauline leaves few, small, short, subulate. *Heads* two and a half inches in diameter, with a very small disk, and about 8 large purple rose-coloured or crimson rays. *Involucre* short, one-third of an inch in diameter; outer bracts, broadly oblong, obtuse, recurved; inner erect, linear-oblong, toothed towards the summit, receptacle naked, papilose. *Ray-flowers* with a small naked achene, a very short slender tube, and a broad obovate-spathulate limb an inch long and nearly half as broad, entire or lobulate at the tip, 5-nerved. *Disk flowers* yellow; corolla-tube long, with short papillar recurved teeth; anther-cells shortly ciliate at the base. *Stigmatic arms* spreading, truncate. *Achenes* nearly quadrate, with a narrow ciliate wing, and two short hispid arms.—*J. D. H.*

Figs. 1 and 2, inner involucral bracts; 3, section of involucre and receptacles; 4, ray flower; 5, style arms; 6, disk flower; 7, achene; 8, anther;—*all enlarged.*



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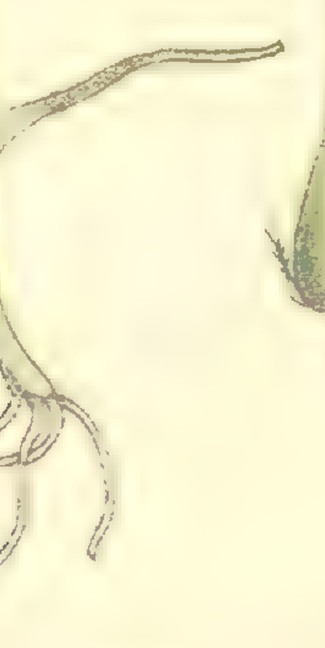


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M.S. del J.N.Fitch Lith.

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Tab. 6420.

VILLARSIA capitata.

Native of Western Australia.

Nat. Ord. Gentianeæ.—Tribe Menyantheæ.
Genus Villarsia, *Vent.*: (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 819.)

Villarsia *capitata*; caule erecto simplicisculo folioso, foliis longe petiolatis reniformibus orbiculatis v. late ovatis obtusis integerrimis v. sinuato-dentatis, floribus in capitula involucrata terminalia congestis pedicellatis, bracteis ovatis obtusis concavis, bracteolis minutis ciliolatis, calycis segmentis ovato-lanceolatis acutis v. acuminatis pilosis v. lanatis, corollæ lobis sub-quadratis apice bilobis lobis sinuque acutis marginibus erosis basi ciliatis, antheris inclusis, glandulis hypogynis 5 subulatis apice penicillatis, ovario elongato-ovoideo, stigmatibus linearibus v. dilatatis, seminibus lævibus nitidis.

V. capitata, *Nees in Pl. Preiss.* vol. i. 365; *Benth. Fl. Austral.* vol. iv. p. 375.
V. involucrata, *Hook. Ic. Pl.* p. 725.

A native of the Swan River district in marshy ground, where it attains a height of six inches or so. I have referred it to *V. capitata* with some doubt, because in the descriptions of that plant as well as in the figure (*V. involucrata*) cited above, the corolla-lobes are acute and quite entire, and little if at all longer than the calyx, whereas in the plant here figured they are much longer than the calyx, broad, strongly 2-lobed and denticulate. On referring to the dried specimens, from which both the description of *V. capitata* and the drawing (of *V. involucrata*) were made, I find the corolla has withered after the manner of Villarsias, namely by the excessively membranous lobes rolling inwards till the whole is shortened, and, as it were, retracted within the calyx, and no amount of maceration or careful dissection has sufficed to unfold them as to show their true shapes. In its usual state the heads of *V. capitata* are much more woolly than those of the specimen here figured, but this character is a very variable one.

April 1st, 1879.

For the seeds of this pretty plant, the Royal Gardens are indebted to Baron Von Mueller. When sown in a pot of earth standing in water they vegetated in profusion, and in a few months the surface of the pot was clothed with a thick mass of bright green foliage studded with primrose-coloured flowers which appeared in succession for some weeks in the open air.

DESCR. Erect, glabrous; stem three to six inches high, simple or nearly so, with two or three leaves, rather stout and fleshy. *Leaves* one-fourth to three-fourths of an inch in diameter, long-petioled, orbicular obovate or broadly ovate, quite entire or sinuate-toothed, bright green; petiole 1-4 inches long, sheathing at the base. *Flowers* pedicelled, in terminal involucrate heads; outer involucral bracts spathulate, inner ovate obtuse concave, rather gibbous beneath, glabrous hairy or villous; bracteoles on the pedicels minute. *Calyx* of 5 spreading ovate-lanceolate hairy divisions. *Corolla*, one-half to three-fourths of an inch in diameter, bright yellow; throat hairy, lobes much longer than the calyx, broadly oblong, bifid, the teeth and sinus between them acute, margins erose or toothed. *Stamens* inserted in the corolla-tube, filaments short; anther oblong. *Hypogynous glands* subulate, with a pencil of hairs at the tip. *Ovary* narrowly ovoid, narrowed into an erect style with two oblong or spathulate stigmatic lobes; placentas parietal near the base of the cell. *Capsule* surrounded by the marcescent calyx and corolla, many-seeded. *Seeds* discoid, quite smooth and shining.—*J. D. H.*

Fig. 1, leaf; 2, outer involucral leaf; 3, back view of flower; 4, part of corolla, and two stamens; 5, anther; 6, ovary and hypognous glands; 7, hypogynous glands; 8 and 9, stigmas; 10, transverse 11, vertical section of ovary; 12, young seed:—*all enlarged.*

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A B del. J.N. Fitch Lith.

Vincent Brooks Day & Son Lith.

Tab. 6421.

GENTIANA ANDREWSII.

Native of Canada and the Eastern United States.

Nat. Ord. Gentianeæ.—Tribe Swertieæ.

Genus Gentiana, *Linn.*; (*Benth. & Hook. f. Gen. Pl.* vol. ii. p. 815.

Gentiana (Pneumonanthe) *Andrewsii*; erecta, robusta, glaberrima, foliis e basi angusta lanceolatis v. ovato-lanceolatis acuminatis 3-nerviis margine scaberulis, floribus in capitulum terminalem congestis et in axillis foliorum fasciculatis sessilibus v. breviter pedicellatis erectis, calycis lobis ovatis oblongisve tubo cylindraceo multo brevioribus, corolla cœrulea calycem longe excedente inflato-clavato obtuse angulata, ore contracto, lobis obsoletis, appendicibus inflexis minutis fimbriatis, antheris in tubum cohærentibus, capsula exserta, seminibus late alatis.

G. Andrewsii, *Griseb. Gen. & Sp. Gentian.*, 287; *et in Hook. Fl. Bor. Am.*, vol. ii. p. 55; *et in A. DC. Prodr.*, vol. ix. p. 113; *A. Gray, Man. Bot.*, p. 388; *Torr. Fl. New York*, vol. ii. p. 107 t. 80.

G. Saponaria, *Frœl. Gent.*, p. 32 excl. Syn.; *Bartl. Fl. N. Am.*, t. 79; ? *Ait. Hort. Kew*, ed. 2, vol. ii. p. 111; ? *Bot. Mag.*, t. 1039, *non Linn.*

This, the "Closed gentian" of the Americans, is one of the handsomest species of the genus; it was long confounded with an American close ally, the *G. Saponaria* of Linnæus, from which it was first distinguished by Grisebach, who, however, does not observe that the *G Saponaria* (erroneously quoted as *G. Catesbæi*, is De Candolles Prodronus l. c.), figured in this work (t. 1039) is, as far as can be ascertained from the imperfect description and very indifferent drawing, referable to *G. Andrewsii*. The chief diagnostic characters between these two species are the linear or spathulate calyx lobes of *G. Saponaria*, which equal or exceed the tube, its light blue corolla, with distinct lobes, and cleft appendages, and its acute narrowly winged seeds. Of these characters the colour of the corolla, and the form and size of the calyx lobes are the only ones determinable from the figure at t. 1039, and as these accord with those of *G. Andrewsii*, I have little doubt of the plate in question representing a miserable specimen of this plant.

April 1st, 1879.

G. Andrewsii is common in the damp woods of the North-eastern United States and Canada; it was brought into Kew in 1776 by a Mr. William Young, and appears to have been introduced into England even at an earlier period by Messrs. Loddiges. It flowers in August and September at Kew, where, however, it does not attain the status and development which it does at Mr. G. Wilson's, of Heatherbank, Weybridge, to whom I owe the magnificent specimen here figured.

Descr. A tall stout usually simple-stemmed biennial, one to two feet high, quite glabrous. *Stem* cylindric, leafy. *Leaves* two to four inches long, lanceolate or ovate-lanceolate from a sessile narrow base, coriaceous, 3-nerved, deep green, with rough margins. *Flowers* crowded in dense terminal heads and also fascicled in the axils of the leaves, one and a half inches long, erect, sessile or very shortly pedicelled. *Calyx-tube* cylindric; lobes ovate, narrowed at the base, spreading not half the length of the tube. *Corolla* much longer than the calyx, inflated and club-shaped, obtusely 5-angled, deep bright blue, mouth much contracted, teeth very obscure between the small fimbriated reflexed folds. *Stamens* with broad flattened converging filaments; anthers sagittate cohering. *Ovary* pedicelled; style short, stigmas removed. *Capsule* exserted. *Seeds* with a broad obtuse wing.—*J. D. H.*

Fig. 1, calyx; 2, vertical section of flower; 3, stamen and pistil; 4, stigmas; 5, seed:—*all* but Fig. 2, *enlarged.*

6422.



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A.B. del. J.N. Fitch Lith

Vincent Brooks Day & Son Imp

L. Reeve & Co. London

TAB. 6422.

VILLANOVA CHRYSANTHEMOIDES.

Native of Colorado and New Mexico.

Nat. Ord. COMPOSITÆ.—Tribe HELENIOIDEÆ.

Genus VILLANOVA, *Lagasc.*; (*Benth. & Hook. f. Gen. Pl.*, vol. ii. p. 404.)

VILLANOVA *chrysanthemoides*; erecta, robusta, superne paniculatim ramosa, polycephala, cano-puberula v. glabrata, foliis alternis ambitu late ovatis v. obovatis petiolatis biternatisectis laciniis linearibus v. apices versus dilatatis acutis v. obtusis recurvis, pedunculis glandulosis, capitulis 1-poll. diametr. involucri bracteis sub 3-seriatis oblongo-lanceolatis acutis v. abrupte longe acuminatis interioribus scariosis, receptaculo convexo, ligulis 15–20 patenti-recurvis apice 3-lobis, fl. disci corolla glandulosa dentibus erectis obtusis, achæniis elongato-obconicis angulatis sulcatis costis rugulosis, angulis lævibus.

V. chrysanthemoides, *A. Gray, Plant. Wright. pars.* ii. p. 96; *Walp. Ann.*, vol. v. p. 248; *Porter & Coulter, Synops. Fl. Colorado*, p. 75.

AMAURIA? dissecta, *A. Gray, Plant. Fendl.*, 104; *Walp. Ann.*, vol. ii. p. 883.

A hardy free-flowering annual, a native of the Rocky Mountains of Colorado and New Mexico, at elevations of four to six thousand feet and upwards; very like a groundsel in habit and appearance, but belonging to a totally different tribe of the vast natural order of Compositæ. The genus is a purely American one, and the only known species are the present and two others, one a native of New Grenada and the other of Peru.

As grown at Kew this *Villanova* shows a tendency to abnormal development of some of its organs. Thus at fig. 3 are represented a floret with two supplementary styles, one with two arms, the other with one only, all emerging from corolla of the same ray-flower. At fig. 5 the achene is seen to have a remarkable projecting lateral process. In none of the flowers examined was there any small cone terminating the style-arms of the disk flowers as is attributed to the genus in the General Plantarum.

The plant here figured was raised from seed sent by

Professor Asa Gray from the Rocky Mountains, which flowered in the Royal Gardens in September, 1878.

DESCR. A stout erect herb, 1-2 feet high, hoary with down on glabrate, paniculately branched and glandular above. *Stem* grooved, leafy. *Leaves* alternate, petioled, about two inches long and broad, twice ternately cut into linear or obovate laciniate acute or obtuse recurved lobes. *Heads* an inch in diameter, on stout glandular peduncles which are naked or have one or more imperfect leaves. *Involucre* hemispherical, glandula; bracts in about three series, linear oblong, acute or acuminate, margins scarious, the inner ones more membranous; receptacle slightly convex, papillose. *Ray-flowers* fifteen to twenty; tube short, glandular; limb cuneate, deeply 3-lobed, bright yellow, lobes obtuse; style arms short, recurved, obtuse. *Disk flowers* numerous, very glandular; lobes five, obtuse; style arms flattened, obtuse. *Achenes* narrowly obconic, four-angled and many-ribbed, young glandular, ripe dark brown, ribs rugulose, angles smooth. —*J. D. H.*

Fig. 1, section of receptacle; 2, ray flower; 3, another with three styles; 5, disk flower with irregular corolla; 6, disk flower with abnormal achene; 7, style arms of disk flower:—*all enlarged.*



A.B del. J.N.Fitch Lith

Vincent Brooks Day & Son Imp.

Tab. 6423.

BILLBERGIA NUTANS.

Native of South America.

Nat. Ord. Bromeliaceæ.—Tribe Ananasseæ.

Genus Billbergia, *Thunb. & Holm.*; (*K. Koch. in Walp. Ann.* vol. vi. p. 72.)

Billbergia *nutans*; acaulis, stolonifera, foliis basalibus productis 12–18 lineari-ensiformibus sesquipedalibus vel bipedalibus chartaceis sursum falcatis ad apicem sensim attenuatis margine denticulatis facie viridibus deorsum canaliculatis dorso striatis parce albo lepidotis haud fasciatis, pedunculo subpedali foliis scariosis bracteiformibus superioribus rubellis, floribus 4–8 in racemum subspicatum cernuum dispositis, braceteis minutis deltoideis, ovario oblongo glabro viridi multisulcato, sepalis lanceolatis acutis ovario longioribus, petalis lanceolatis viridibus margine cœruleis basi squamatis sepalis duplo longioribus, staminibus petalis œquilongis antheris linearibus versatilibus, stigmate exserto.

B. nutans, *H. Wendl. in Regel. Gartenfl.* vol. xviii. (1869) p. 162 t. 617; *E. Morren in Belg. Hort.* 1876, p. 220 t. 15.

This is one of the best marked species of that section of the genus *Billbergia* which is characterised by a comparatively lax drooping inflorescence and bright red bract-like upper stem-leaves, to which belong many of the species which are most highly prized in horticulture. This one may be recognised, at a glance, by its narrow acute leaves and green petals with a sudden blue edge. The precise country to which it belongs is not known, and there are no dried wild specimens in our London herbaria, but the head-quarters of its allies are Central and Southern Brazil. We have had the plant at Kew for some time. The plate was drawn from a specimen that flowered at Kew in January, and it has also been flowered this winter by Mr. Chas. Green, in the fine collection of Sir George Macleay. It was first introduced into cultivation about 1868.

Descr. Acaulescent, stoloniferous. *Leaves* twelve to eighteen produced in a utricular rosette, linear-ensiform, reaching finally a length of one and a half or two feet, half

an inch broad at the top of the dilated base, narrowed gradually to the point, falcate in the upper half, minutely toothed, the face bright green, the back finely striped and thinly white-lepidote, without any bands or spots. Peduncle central, about a foot long, its bract-leaves erect and lanceolate, the lower ones greenish, the upper bright red. *Flowers* four to eight in a cernuous subspicate raceme; pedicels very short or none; bracts minute, deltoid. *Perianth* about two inches long; ovary oblong, naked, bright green, with many irregular vertical ribs and hollows. *Sepals* lanceolate, acute, about half an inch long. *Petals* lanceolate, twice as long as the sepals, bright green, with a sudden blue edge, with a couple of small scales near the base. *Stamens* reaching to the top of the petals; anthers yellow, linear, versatile. *Style* a little longer than the stamens; stigmas convolute.—*J. G. Baker.*

Fig. 1, a flower cut through vertically, *nat. size;* 2, a scale from the base of a petal; 3, an anther; 4, stigmas:—*the three last magnified.*

M.S. del J.N.Fitch Lith

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Tab. 6424.

LINARIA DALMATICA.

Native of S. Europe, Asia Minor, and Persia.

Nat. Ord. Scrophularineæ.—Tribe Antirrhineæ.

Genus Linaria, *Pers.*; (*Benth. & Hook. f. Gen. Pl.* vol. ii. p. 932.)

Linaria (Linariastrum) *dalmatica*: erecta, elata, robusta, paniculatim ramosa, glaberrima, glauca, foliis plerisque alternis patentibus ovato-v. oblongo-v. elongato-lanceolatis acuminatis integerrimis subrigidis nervis obscuris, basi angustatis v. semi-amplexi caulibus, racemis paniculatis foliosis gracilibus elongatis patentibus multifloris, floribus remotiusculis amplis breviter pedicellatis, bracteis foliaceis, calycis segmentis lanceolatis acuminatis patulis, corolla lutea basi in calcar rectum subulatum producta, labii superioris segmentis recurvis acutis, inferioris lobis 2 lateralibus amplis reflexis intermedio minuto porrecto subacuto, palato prominente ochrolemo villoso.

L. dalmatica, *Mill. Dict.* ed. 8, No. 13; *Chavannes, Monog. Antirrh.*, 126; *Ait. Hort. Kew*, ed. 2, vol. iv. p. 16; *Bot. Reg.*, t. 1683; *Reich. Iconog.* t. 438; *Benth. in DC. Prodr.*, vol. x. p. 275.

L. grandiflora, *Desf. Coroll. inst. Tourn.*, 30 t. 21.

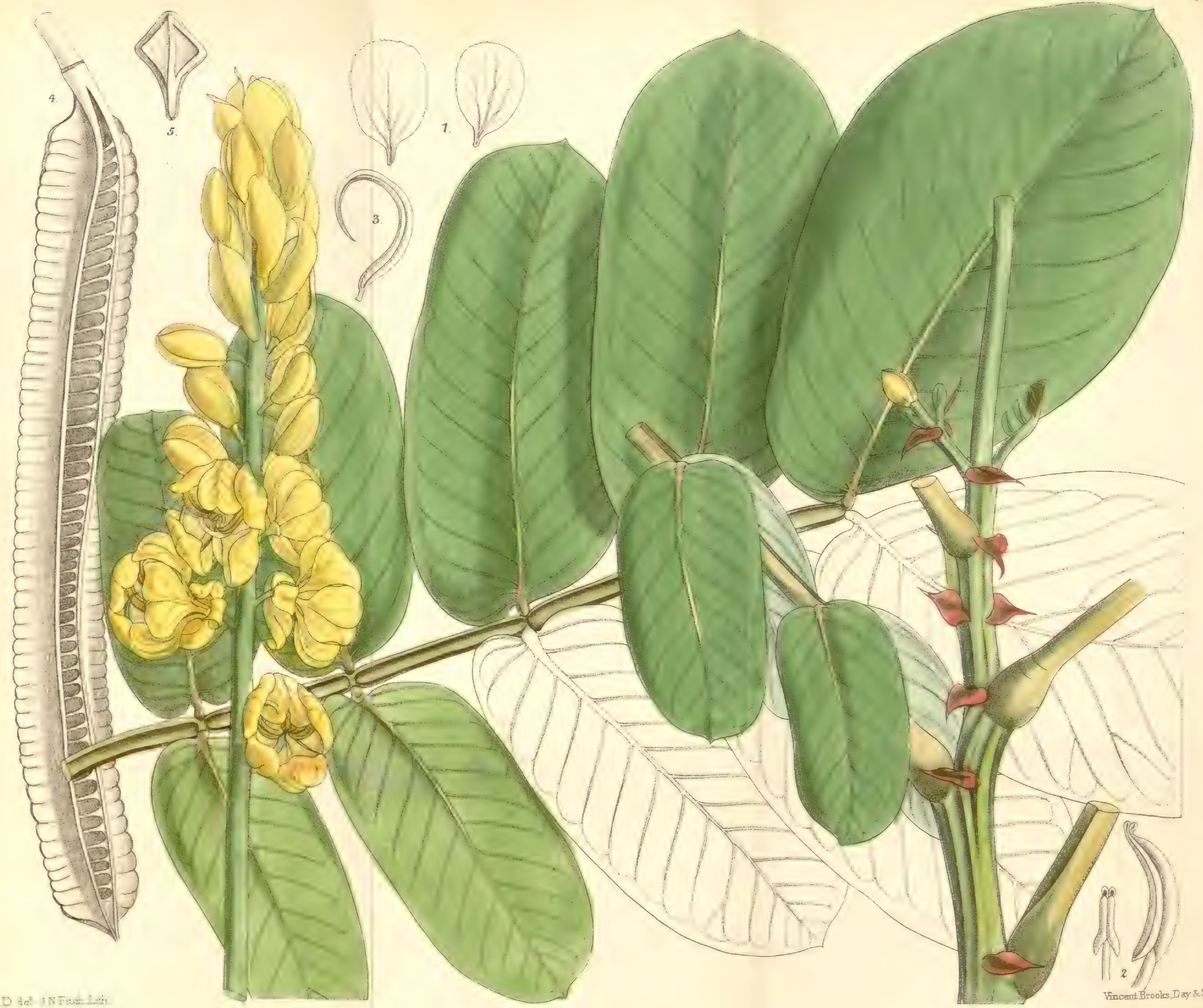
Antirrhinum dalmaticum, *Linn. Sp. Pl.* p. 857.

A handsome but very variable hardy Toadflax, of which a rigid erect form, with crowded flowers in a dense raceme is figured in the "Botanical Register," from seeds sent from Persia. It was, however, introduced into England before 1731, when it was cultivated by Phillip Miller in his garden at Chelsea. It has a wide geographical range; commencing in the east side of the Adriatic, it ranges through the islands of the Levant to Constantinople, Odessa, the Caucasus, Mesopotamia, Persia, and the Caspian Sea. Throughout this great extent of country it retains its floral characters with remarkable uniformity, but varies in habit, being sometimes very robust, and in foliage from very broadly ovate and amplexicaul to narrow linear-lanceolate and narrowed at the base. Though never before figured in this Magazine, it has been for many years cultivated at Kew, where it flowers in the open border in September.

April 1st, 1879.

Descr. A robust erect more or less paniculately branched glaucous smooth perennial. *Leaves* scattered, spreading, from one-half to four inches long; usually lanceolate or ovate-lanceolate from a semi-amplexicaul base, rather rigid, smooth, with obscure nerves, sometimes short and broadly ovate, at others oblong, at others linear-lanceolate and two inches long with a narrow base. *Racemes* long, slender, panicled, spreading, with distinct flowers, or stout erect with crowded flowers; bracteal leaves, like the cauline, but shorter, spreading; pedicels shorter than the flower, erect, stout. *Calyx-segments* ovate-lanceolate, acuminate, spreading, erect in fruit. *Corolla* nearly two inches long, including the spur; bright golden yellow, with orange on the palate; tube short, compressed, rather gibbous behind at the base, produced in front into a slender straight subulate spur of its own length; limb large, upper lip with two broad acute reflexed lobes; lower with two very broad reflexed overlapping rounded lateral lobes, between which the small obtuse or subacute mid-lobe projects; palate prominent, villous. *Stamens* hairy at the base. *Ovary* glabrous. *Capsule* small, globose, opening by apical teeth. *Seeds* angular, with raised edges and tubercled faces.—*J. D. H.*

Fig 1, upper lip and outer of the corolla laid open, showing the stamens; 2, pistil:—*both enlarged.*



M.T.D. del. J.N.Fitch. Lith.

Vincent Brooks, Day & Son Imp

Tab. 6425.

CASSIA alata.

Native of Tropical America.

Nat. Ord. Leguminosæ.—Tribe Cassieæ.

Genus Cassia, *Linn.*; (*Benth. & Hook. f. Gen. Pl.* vol. i. p. 57.)

Cassia (Senna) *alata:* fruticosa, ramulis robustis pubescentibus, foliis 2-pedalibus rachi articulata 2-alata eglandulosa, foliolis 8-16-jugis amplis breviter petiolulatis oppositis lineari-oblongis basi rotundatis v. obliquè subcordatis apice rotundatis retusisve apiculatis glaberrimis nervosis terminalibus sæpe rotundatis, stipulis ovato-cordatis subulato-acuminatis persistentibus, racemis terminalibus axillarisbusque strictis multifloris simplicibus v. 2-fidis, bracteis ovatis concavis, sepalis coloratis, legumine ligulato stricto, valvis late longitudinaliter alatis alis crenatis, seminibus complanatis trapezoideis faciebus excavatis marginibus discoque medio incrassatis.

C. alata, *Linn.*; *Willd. Sp. Pl. vol. ii. p.* 523; *Ait. Hort. Kew.*, ed. 2, vol. iii. p. 29; *DC. Prodr.*, vol. ii. p. 492; *Griseb. Fl. Brit. W. Ind.*, p. 209; *Wight. et Arn. Fl. Penins Ind. Or.*, p. 253; Wight. *Sc. Pl. Ind. Or.*, t. 453; *Hook. f. Fl. Brit. Ind.*, vol. ii. p. 264; *Reichb. Ic. et descr. Pl. Cult.*, t. 84.

C. bracteata, *Linn. fil. Suppl.* 232; *DC.* l. c.

Senna alata, *Roxb. Fl. Ind.*, vol. ii. p. 349.

Herpetica, *Jacq. Obs.* vol ii. p. 24, t. 45, f. 2; *Rumph. Hort. Amboin.*, vol. ii. t. 18;

A very handsome large shrub, a native of tropical America, whence it has been introduced into all other tropical countries, in many of which it has established itself as a denizen, notably in India, where it is found in gardens and naturalized in Bengal. According to Roxburgh it is known to Europeans in the Carnatic provinces under the name of Mitta tamara, and the same author ascribes also to it names in Sanscrit, Hindi, Bengali, and Telinga, which would go far to establish its claim to be a native of India, had the fact of its introduction from the New World not been well established by evidence of various kinds. Drury, in his "Useful plants of India" (p. 120), calls it the Ring-worm plant, and citing Roxburgh and others, says that its leaves mixed with lime-juice are used as a remedy for ring-worm, as are its fresh leaves bruised and simply rubbed into the diseased parts. The

leaves are also an aperient, and a tincture of them when dried operates like Senna. Further the Hindoo doctors affirm that the plant affords a cure for all poisonous bites.

Cassia alata was introduced into England in 1731 from the West Indies, and has been raised and flowered at Kew from seeds received from the East Indies, but the specimen here figured was flowered by Mr. Bull in December of last year.

Descr. A large shrub with a stout trunk, which in old plants is sometimes spinous from the persistent stipules; branches robust, downy. *Leaves* two to three feet long, spreading, strict; rachis jointed and winged on each side, eglandular; leaflets eight to fourteen pair, very shortly petioled, two to five inches long, linear-oblong, quite glabrous; apex rounded or retuse, apiculate; base rounded or obliquely sub-cordate; nerves 12 to 15 pair; stipules broadly ovate-cordate, suddenly acuminate, cuspidate, rigid, persistent, often reddish *Racemes* terminal and axillary; rachis one to two feet long, stout, sub-erect, simple or forked, many-flowered; bracts large, coriaceous, caducous, yellow. *Flowers* shortly pedicelled, one inch in diameter, golden yellow; *Sepals* oblong, obtuse, golden yellow. *Petals* shortly clawed. *Legume* six to ten inches long by three-quarters of an inch broad, flattened, with a broad crenate wing on the back of each valve, dark brown. *Seeds* very numerous, transverse, trapeziform and narrowed at the base into a stalk, margins and medial line thickened, faces excavated between the thicknesses.—J. S. H.

Fig. 1, petals; 2, stamens; 3, large stamen 4, pods; 5, seed; all but Fig. 4 *enlarged.*

H.J.D. del. J.N.Fitch Lith.

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TAB. 6426.

ALLIUM ERDELII.

Native of Palestine.

Nat. Ord. LILIACEÆ.—Tribe ALLIEÆ.

Genus ALLIUM, *Linn.* (*Regel. Monogr. in Act. Hort. Petrop.* vol. iii.)

ALLIUM *Erdelii;* bulbo solitario subgloboso, foliis 3–4 confertis basalibus late linearibus acuminatis suberectis glaucis ciliatis facie canaliculatis, scapo valido tereti, floribus permultis dense umbellatis, pedicellis flore 2–3-plo longioribus. spathâ brevi sæpe monophylla rotundata cuspidata interdum 2-3-phylla, perianthii rotati segmentis lanceolatis acutis denticulatis albis viridi vittatis, staminibus perianthio æquilongis, filamentis conformibus deorsum dilatatis purpureis, ovario globoso-trigono nigro nitido.

A. Erdelii, *Zuccar. in Abhand. D. K. Bayr. Acad.* vol. iii. p. 237, tab. 5; *Kunth Enum.*, vol. iv. p. 688; *Regel. Monog.*, p. 250.

A. Libani, *Boiss. MSS.*

This is one of the prettiest of all the Alliums for horticultural purposes. It is allied to the well-known *A. nigrum* (of which a good figure will be found, BOTANICAL MAGAZINE, t. 1148, under the name of *A. magicum*), but is much dwarfer, with a very compact umbel of large fragrant flowers, the sharp-pointed white perianth-segments keeled with green, the filaments with a stain of bright claret purple at the base, and the ovary a glossy black. It is confined to Palestine, but extends from the Lebanon range as far south as Jerusalem. It has not been known in cultivation till last year we received dried specimens from our diligent correspondent, the Rev. G. E. Post, of the Syrian Protestant College at Beyrout, and one of the bulbs being found to be still alive was transferred from the herbarium to the garden, where it revived, and in process of time produced the leaves and flowers which are here drawn.

DESCR. *Bulb* solitary, subglobose, about an inch in diameter. *Leaves* three or four, produced in a rosette from the surface of the ground, broad linear, suberect, tapering to the point, glaucous, channelled down the face, minutely ciliated, half a foot or more long. *Scape* stout, terete, glaucous, with

a purple tinge towards the base, varying in length from two to twelve inches. *Flowers* forming a dense umbel, two or three inches in diameter; pedicels greenish, half an inch or an inch long; spathe not longer than the pedicels, usually monophyllous, round, cuspidate, sometimes splitting into two or even three valves. Expanded *perianth* rotate, about an inch in diameter; segments lanceolate, acute, denticulate, pure white, with a narrow green keel. *Stamens* as long as the perianth-segments, suberect in the expanded flower; filaments uniform, lanceolate, the upper part white, the base stained with bright claret-purple; anthers small, pale yellow, linear-oblong. *Ovary* globose-trigonous, glossy black; style short, claret-purple. *Capsule* globose-trigonous, a third of an inch in diameter; seeds two in a cell, superposed, dull black.—*J. G. Baker.*

Fig. 1, a monophyllous spathe; fig. 2, an expanded flower:—*both magnified.*

1.

2

3.

H.T.D. del. J.N.Fitch, Lith

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Tab. 6427.

GOETHEA MACKOYANA.

Native of Brazil.

Nat. Ord. Malvaceæ.—Tribe Urreneæ.

Genus Goethea, *Car.*; (*Benth. & Hook. f. Gen. Pl.* vol. i. p. 205.)

Goethea *Mackoyana*; fruticosa, ramosa, ramulis petiolisque molliter patentim pilosis, foliis sparsis gracile petiolatis elliptico-lanceolatis v. oblanceolatis acuminatis basi acutis supra glabris saturate viridibus subtus pallidioribus coriaceis utrinque opacis integerrimis v. marginibus obscure undulatis, floribus in racemos terminales demum subelongatos dispostis erectis, bracteis oblongo-lanceolatis subacutis viridibus pedicellos superantibus, bracteolis 4-5 roseis ovatis v. ovato-lanceolatis acuminatis basi cordatis pubescentibus calycem 5-fidum duplo longioribus, petalis lineari-oblongis obtusis fusco-purpureis bracteolis duplo longioribus.

Pavonia Mackoyana, *Morren in Belgiq. Hort.*, vol. xxviii. (1878) p. 59. t. iii.

Though in several respects differing in character from the figure of *Pavonia Mackoyana* as figured in the *Belgique Horticole* under *Pavonia*, I cannot doubt this being the same plant; the most striking difference is in the leaves, which in the above-cited plate are represented as strongly serrate; on referring however to the accompanying Latin description, they are stated to subentire (limbo subintegro), and in the accompanying remarks as "limbe presque entier ou faiblement acute." They are also much larger in the Belgian figure than in our plant, but this may be due to the specimen being better grown. Another discrepance in character is the absence of minute pellucid dots in the leaves described by Morren; in place of which I find minute furfuraceous scales on the young bracts. Though referred by Morren to *Pavonia*, that learned author justly remarks that this plant is referable to *Goethea* by those who uphold that genus, as is done by Bentham in the "Genera Plantarum" and apparently with sufficient reason, the remarkable bracts forming a very well marked character in this species as well as in the original *G. cauliflora*, Nees, and in *G. strictiflora*, Hook. (Tab. nost. 4677). On the other

hand the character of *Goethea* taken from the inflorescence being cauline, breaks down in this plant, in which it is racemose as in *Pavonia* proper.

G. Mackoyana was introduced from Brazil, in 1873, by Jacob Mackoy of Liege, and the specimen here figured was communicated by Mr. Bull, with whom it flowered in December of last year.

Descr. A shrub; branches short, cylindrical, clothed, as also the petioles, with soft spreading close-set hairs. *Leaves* three to five inches long, elliptic-lanceolate, acuminate, quite entire or obscurely sinuate, coriaceous, dark-green, glabrous, nerves beneath red-brown; petiole three-fourths to one and a half inch long, slender. *Flowers* in a terminal dense raceme which elongates during flowering; bracts one-half to three-fourths of an inch long, elliptic- or linear-lanceolate, acuminate, pubescent; pedicels shorter than the bracts, jointed about the middle. *Bracteoles* four or five, two-thirds of an inch long, ovate or ovate-lanceolate, acuminate, pubescent, rose-red, cordate at the base, plaited. *Calyx* half as long as the bracts, campanulate, 5-lobed to below the middle, segments acute. *Petals* dark brown purple, twice as long as the bracteoles, linear-oblong, rounded at the tip, erect, about 7-nerved. *Filaments* and styles rose-red; anthers and stigmas blue purple.—*J. D. H.*

Fig. 1, calyx; 2, petals; teeth of staminal tube:—*all enlarged.*

H.T.D. del J.N.Fitch Lith

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Tab. 6428.

IRIS DICHOTOMA.

Native of Eastern Siberia.

Nat. Ord. Iridaceæ.—Tribe Irideæ.

Genus Iris, *Linn.*; (*Baker in Journ. Linn. Soc.*, vol. xvi. p. 136.)

Iris (*Apogon*) *dichotoma*; rhizomate breviter reptante rosulis foliorum confertis, foliis laxe dispositis ensiformibus subpedalibus, caule 3-4-pedali valde ramoso, pedunculis ascendentibus elongatis, floribus 4-6-nis purpureis vespertinis fugacibus, spathis brevibus valvis exterioribus oblongis viridulis firmulis, interioribus membranaceis, pedicellis spathâ æquilongis, ovario clavato semipollicari, tubo supra ovarium nullo, segmentis exterioribus oblanceolato-spathulatis limbo falcato recurvato ungue variegato subduplo breviori, segmentis interioribus paulo brevioribus immaculatis emarginatis, styli ramis oblanceolato-oblongis, cristis lanceolatis, antheris filamento libero æquilongis.

I. dichotoma, *Linn. fil. Suppl.*, p. 97; *Vahl. Enum.* vol. ii. p. 236; *Willd. Sp. Plant.* vol. i. p. 230; *Ker. in Bot. Reg.* t. 246; *Sweet Brit. Flow. Gard.* t. 96, etc.

I. pomeridiana, *Fischer MSS.*; *Klatt. in Linnea*, vol. xxxiv. p. 612.

Pardanthus dichotomus, *Led. Fl. Ross.* vol. iv. p. 106.

This is a very distinct species of Iris, remarkable for its much branched habit, short spathes and fugacious, rather small bright purple flowers, which expand in the evening, one after another in the same cluster on successive days, after the fashion of *Tigridia* or *Pardanthus*. It is a native of the Eastern half of Siberia, and has long been known in cultivation, but it has always been very rare, and it has not yet appeared in the Botanical Magazine. The drawing was made from a plant that flowered at Kew last September, raised, I believe, originally from seeds sent by Dr. Hance.

Descr. *Rhizome* short-creeping, with the tufts of leaves crowded upon it. Produced *leaves* six or eight in a distichous tuft, the base of which extends over the lowest half-foot of the stem, ensiform, pale green, the largest about a foot long and an inch broad. *Flowering-stems* three or four feet high, much more branched than in any other species of the genus. *Flowers* four or six in a cluster, scentless, bright violet-purple. *Spathe-*

valves under an inch long, subequal, the outer ones oblong green and firm in texture, the inner membranous. *Pedicels* just as long as the spathe, articulated at the tip. *Ovary* clavate, half an inch long; perianth-tube obsolete above the ovary; outer segments of the limb oblanceolate-spathulate, an inch and a half long, the reflexing roundish violet-purple limb not more than half as long as the permanently suberect claw, which has a beardless pale green keel, from which lines of bright purple on a paler ground radiate transversely; inner segments of the perianth similar in shape to the outer, but rather shorter, plain purple, deeply emarginate at the tip. Petaloid branches of the *style* oblanceolate—oblong, nearly white; crests lanceolate, very acute. *Anthers* linear-oblong, equalling in length the free filaments.—*J. G. B.*

Fig. 1, outer segment of the perianth; Fig. 2, petaloid branch of the style with its crests:—*both enlarged.*

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Tab. 6429.

ALBUCA WAKEFIELDII.

Native of East Tropical Africa.

Nat. Ord. Liliaceæ.—Tribe Scilleæ.

Genus Albuca, *Linn.*: (*Baker in Journ. Linn. Soc.* vol. xiii. p. 285.)

Albuca (*Pallastema*) *Wakefieldii*; bulbo ovoideo tunicis brunneis apice truncatis, foliis 4-5 lineari-ensiformibus acuminatis glabris flaccidis pedalibus vel sesquipedalibus, scapo tereti bipedali, floribus 10-12 inodoris cernuis laxe racemosis, pedicellis ascendentibus flore brevioribus, bracteis parvis lanceolatis, perianthii albo-viriduli segmentis exterioribus planis lineari-oblongis, interioribus oblanceolato-oblongis albido marginatis apice cucullatis, staminibus omnibus fertilibus, filamentis applanatis basi panduriformibus, antheris parvis oblongis. stylo subulato ovario 2-3 plo-longiori.

The bulbs of this interesting new *Albuca* were sent by the Rev. Mr. Wakefield, through Colonel Grant, to the Kew collection, where the plant flowered for the first time last autumn. *Pallastema* is a subgenus of *Albuca*, with a perianth like that of the type, but with a style instead of being short and prismatic, subulate, and much longer than the ovary, as in an ordinary *Ornithogalum* or *Scilla*. The subgenus is confined to tropical Africa, and for nearly a century only a single species was known, *Albuca abyssinica*, named by Dryander, and figured by Jacquin and Redouté. Through the explorations of late years six additional species have been added, four by Dr. Welwitsch in Angola, and one by Baines on the east side of the continent, near the southern tropic. Since the date of my monograph of *Albuca* in 1873, altogether twelve new species have been added to the sixteen then known.

Descr. *Bulb* pale green, ovoid, an inch and a half in diameter; tunics membranous, pale brown, not produced into bristles at the tip. *Leaves* four or five produced, cotemporary with the flowers, linear-ensiform, flaccid, glabrous, a foot or a foot and a half long, an inch broad at the base, tapering to the point. *Scape* terete, longer than the leaves. *Flowers* ten or twelve, arranged in a laxe raceme, which is six

or nine inches in length when fully expanded, cernuous, scentless, greenish-white; pedicels ascending, the lowest under an inch long; bracts lanceolate, shorter than the pedicels. *Perianth* an inch long; outer segments flat, linear-oblong, all green; inner segments broader, oblanceolate-oblong, green, with broad white borders, inflexed at the tip. *Stamens* all fertile, rather shorter than the inner segments of the perianth; filaments flattened, dilated at the base, and again auricled above the top of the ovary; anthers small, pale yellow, oblong. *Ovary* oblong-trigonous; style subulate, more than twice as long as the ovary; stigma capitate.—*J. G. Baker.*

Fig 1, a flower with the perianth stripped away : *magnified.*



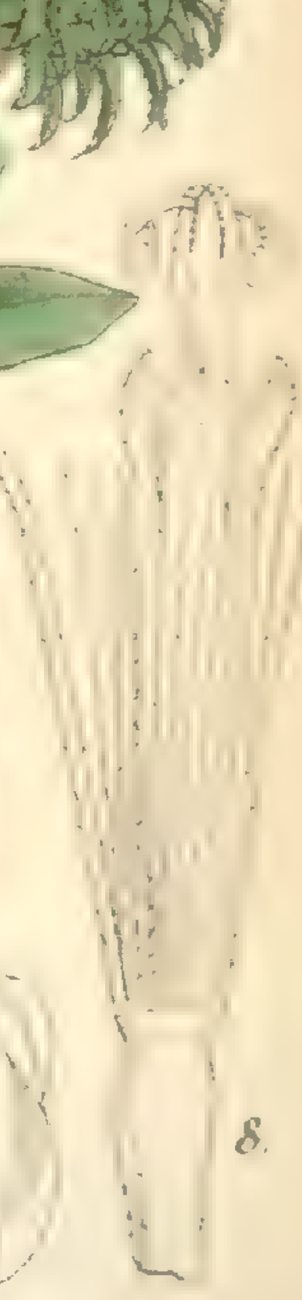














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Tab. 6430.

ASTER Townshendii.

Native of Colorado.

Nat. Ord. Compositæ.—Tribe Asteroideæ.

Genus Aster, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* ii. 271).

Aster (Euaster) *Townshendii*: erecta, herbacea, ramosa, scaberulo-pilosa, ramis robustis costatis foliosis, foliis radicalibus elongato-spathulatis obscure sinuatis apice rotundatis, petiolo alato, caulinis e basi semiamplexicauli ovato-oblongis obtusis irregulariter dentatis, capitulis 2½ poll. diam., pedunculis validis foliaceo-bracteatis, involucri late turbinati bracteis numerosissimis multiseriatis herbaceis rigidis linearibus acutis squarroso-recurvis hispidulis exterioribus brevioribus, ligulis sub.-2-seriatis pollicaribus linearibus, herbaceis, fl. disci flavis pappo 1-seriato setis inæqualibus, appendicibus stigmatis brevibus obovatis, acheniis glabris.

I fail to find any description, or any specimen in the Kew Herbarium answering to the character of this very handsome plant, whose nearest ally appears to be the *Aster canescens*, A. Gr., (*Diplopappus incanus*, Lindl., tab. nost. 3382, var. *latifolia*, Gray, from which it differs in its scabrid hairs, robust habit, the cordate bases of the much broader leaves, and the very large heads. It is remarkable that so beautiful a plant should have escaped the notice of the many excellent botanists and zealous collectors that have explored the Rocky Mountains of Colorado, and that it should find no place in the synopsis of that Flora published in 1874 by Messrs. Porter and Coulter. It was raised from seeds presented in 1877 to the Royal Gardens by Richard B. Townshend, Esq., a gentleman who has resided in Colorado, and to whom the gardens are indebted for other valuable contributions from that interesting country. The seeds vegetated freely and the plant flowered profusely in September, 1878.

Descr. A stout, much branched herb, clothed with short rigid hairs; stem and branches green, angled and ribbed, leafy. *Radical* leaves 8 to 12 inches long by one to one and a

half inches broad, elongate-spathulate from a broad winged petiole, rounded at the apex, margin obscurely undulated, midrib very stout; cauline ovate-oblong, obtuse from a cordate semiamplexicaul base, remotely and irregularly toothed, spreading, bright green, paler beneath. *Heads* terminating all the branches, two and a half inches in diameter; peduncles stout, thickened upwards, bearing short rather squarrose scattered linear bracts with cordate bases. *Involucre* between turbinate and hemispherical; bracts very numerous, in many series, linear, acute, rigidly herbaceous, green, strongly recurved from about the middle, giving the involucre a squarrose appearance, innermost erect, all scabrid, the tips glandular. *Receptacle* flat, pitted. *Ray-flower* in about two series, bright violet-blue; ligules an inch long, minutely toothed at the tip; style-arms slender with rounded tips. *Disk-flowers* golden yellow, puberulous; corolla lobes short; style-arms with obovate broad appendages. *Pappus* of few marginal bristles. *Achenes* (unripe) glabrous, smooth.—*J. D. H.*

Fig. 1, Vertical section of involucre and receptacle; 2, inner bract of involucre; 3, ray-flower; 4, its style-arms; 5, disk-flower; 6 and 7, its arms; 8, disk-flower, with inner bract of involucre connate to the achene; 9, hair of pappus:—*all enlarged.*



1



3





2

J N Fitch Lith.

Vincent Brooks Day & Son Imp

Tab. 6431.

CALCEOLARIA deflexa.

Native of Peru.

Nat. Ord. Scrophularineæ.—Tribe Calceolarieæ.

Genus, Calceolaria, *Linn.*; (*Benth et Hook., f. Gen. Pl.* vol. ii. p. 919).

Calceolaria (*Salicifoliæ*) *fuchsiæfolia*; gracilis, glabra, suffruticosa, ramulis teretiusculis, v. obtuse 4-gonis, foliis petiolatis ovato-lanceolatis inæqualiter denticulatis supra luride viridibus paniculæque ramis plus minusve vernicosis subtus pallidis, paniculis amplis, axillis 2-foliatis, floribus nutantibus, calycis lobis triangulari-ovatis, corollæ glabræ labio superiore reniformi-orbiculare crenato, inferiore inflato subgloboso incurvo paulo minore.

C. deflexa, *Ruiz and Pav., Fl. Per. & Chil.* vol. i. p. 15, t. 23, *f. a.*; *Benth. in DC. Prodr*, vol. x. 217.

C. fuchsiæfolia, *Hemsl. in The Garden*, 1879, p. 258.

After a careful examination of the species of *Calceolaria* belonging to the ninth, or *Salicifolia* section of Bentham, in De Candolle's "Prodromus," and a comparison of the numerous specimens which have accumulated in our Herbaria since the publication of that work, I think it cannot be doubted that these species have been unduly multiplied, and that it is even doubtful whether some of the original species of Ruiz and Pavon may not have been separated on trivial grounds. Be this as it may, the identity of the present plant with the *C. deflexa* of Ruiz and Pavon cannot be questioned; the character mainly depended upon by Mr. Hemsley, who advances the species doubtfully, for distinguishing it, namely, the absence of viscosity, not holding good with the specimen here figured, in which the upper surface of the leaves and the branches of the panicle were more or less shining from the presence of a viscous exudation; a character, however, depending for its development on the warmth of the weather and on the condition of the plant.

Specimens which I cannot distinguish from these, and named by Bentham *C. deflexa*, are contained in the Kew Herbaria, gathered in the Cauta valley by Cruckshanks, near San

June 1st, 1879.

Matteo, by Matthews, and near Quito by Professor Jameson; and there are specimens in the Herbaria which were cultivated many years ago from Messrs. Veitch's garden (probably then at Exeter). I suspect that *C. cerasifolia*, Benth., *C. involuta*, Ruiz and Pavon, and *C. viscosa*, R. and P. are all forms of one plant, which in this case extends from New Granada to Peru. *C. stricta*, H. B. & K., differs in its larger leaves, more narrowed into the petiole; and *C. tetragona*, Benth., in the entire larger more elliptic leaves and large calyx. I should mention that, in identifying the plants of Ruiz and Pavon by those authors' plates, much allowance must be made for these being often made by very inferior artists from very incomplete specimens, and these always in a dried state.

C. deflexa was introduced into cultivation by Messrs. Rodger M'Clelland and Co., of Newry, and the figure here given was taken partly from specimens kindly communicated by W. T. Gumbleton, Esq., in March last, and partly from one that flowered at Kew at the same time.

Descr. A slender glabrous undershrub; stem and branches round or obscurely four-angled; leaves above, and panicle more or less viscid. *Leaves* two to two and a half inches long, ovate-lanceolate, acute, unequally toothed or serrate, rounded acute or subcordate at the base, dark green above, whitish beneath; petiole one quarter to half an inch long. *Panicle* large, effuse, with small opposite lanceolate leaves at the forks. *Flowers* drooping, on slender pedicels. *Calyx-lobes* triangular-ovate, one-third of an inch long, acute. *Corolla* one inch across the lobes, sulphur-yellow; lips subequal, upper orbicular-reniform, compressed from back to front, crenate; lower rather larger, inflated, incurved and rounded; mouth subquadrate, villous, exposing the stamens and ovary. *Ovary* conical, glabrous; style short.—*J. D. H.*

Fig. 1, Upper lip of corolla and stamens ovary; 2, vertical section of flowers 3, calyx and unripe fruit; 4, stamens:—*all enlarged.*

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Tab. 6432.

CYPRIPEDIUM Lawrenceanum.

Native of Borneo.

Nat. Ord. Orchideæ.—Tribe Cypripedieæ.

Genus Cypripedium, *Linn.*; (*Endl. Gen. Plant.*, p. 220).

Cypripedium *Lawrenceanum*, acaule v. caulescens, foliis paucis distichis lineari-ellipticis acutis planis viridibus albo tessellatis, scapo tomentoso purpureo 1-2-flore, flore magno, sepalo dorsali orbiculato amplo subacuto albo purpureo-vittato vittis basin versus verrucosis lateralibus parvis in laminam angustam lineari-oblongam concavam obtusam deflexam labello breviorem connatis, petalis planis horizontalibus late linearibus ciliatis secus marginem verrucosis nitidis ciliatis purpureis ornato, labello subcylindriceo apice rotundato fusco-purpureo, ore parum ampliato, anthera sterili lunata cuspidibus incurvis acutis margine interiore fisso.

C. Lawrenceanum, *Reichb. in Gard. Chron.* 1878, ii. p. 748.

Dr. Reichenbach in his description of this plant well remarks that it unites the flower of the Javan *C. barbatum* with the foliage of *C. Dayanum*. It is one of a series of forms of the genus, with few linear usually tessellately spotted leaves, few- or single-flowered scapes, spreading petals, broad dorsal sepal and small combined lateral sepals, which extends from Nepal on the West (*C. venustum*, tab. nost. 2129) to Borneo and the Philippine Islands on the East, the colour becoming more intense and the flowers larger in proceeding southward and eastward, till they attain their known maximum in the present splendid Bornean species, and in *C. Argus* (tab. 6175) of the Philippine Islands. It includes also *C. purpuratum* (tab. nost. 4901) of the Indian Peninsula, *C. barbatum*, Ldl. (t. 4234) of Java, *C. Hookeræ*, Rchb. f. (t. 5362), *C. Fairieanum*, Ldl. (t. 5024), and others. *C. Lawrenceanum* is one of Mr. Burbidge's discoveries during his recent expedition to Borneo, in the service of the Messrs. Veitch; another of the fruits of which journey is the beautiful *Burbidgea nitida*, figured in the January Number of this work (t. 6403). Mr. Burbidge informs me that he found it on sandstone and limestone rocks,

in shady forests, at an elevation of 2000 feet, sometimes attaining three feet in height. It flowered in Messrs. Veitch's establishment in December, 1878, and was named by Dr. Reichenbach after Sir Trevor Lawrence, Bart., M.P., the possessor of a renowned collection of Orchids, which the author of the species describes as being of exceptional richness and beauty.

Descr. Stemless, or with the stem a foot high. *Leaves* distichous, nearly a foot long, including the broad flattened sheath, linear-elliptic, acute, two inches broad, nearly flat, grooved down the centre in front, and keeled at the back, about 12-nerved, tessellated with bright greenish white and dull green. *Scape* longer than the leaves, flexuous, 1-2-flowered, clothed with long spreading glandular hairs, as are the bract, ovary, and back of the sepals. *Bract* small, oblong, obtuse. *Flower* erect, upwards of five inches across the petals, and as much from the tip of the dorsal sepal to that of the lip. *Dorsal sepal* very large, orbicular, rather broader above the middle, white with broad purple alternately long and shorter bands, the latter warted towards the base, none of them reaching the tip; margins very slightly revolute below the middle; lateral sepals combined into a brown oblong obtuse concave ribbed limb much shorter than the lip. *Petals* straight, flat, two and a half inches long, and one half inch broad; ciliate, green, dull purple towards the subacute tips, with a series of six or eight purple vanished hairy warts along each margin, and a few on the disk beyond the middle *Lip* dull purple, two inches long, subcylindrical, ventricose below the middle, mouth slightly dilated, emarginate in front. *Staminode* lunate with acute incurved cusps, and five teeth in the sinus, cleft with a narrow sinus at the back.—*J. D. H.*



M.S. del. J.N.Fitch, Lith.

Vincent Brooks Day & Son Imp.

Tab. 6433.

CHIONODOXA Luciliæ.

Native of Asia Minor and Crete.

Nat. Ord. Liliaceæ.—Tribe Hyacintheæ.

Genus Chionodoxa, *Boiss.* (*Baker in Journ. Linn. Soc.* vol. xi. p. 435).

Chionodoxa *Luciliæ;* bulbo ovoideo tunicis brunneis membranaceis, foliis 2–3 loratis erectis viridibus facie canaliculatis apice cucullatis, scapo gracili tereti, floribus 1–10 in racemum laxum deltoideum dispositis, bracteis minutis membranaceis deltoideis, pedicellis patulo-cernuis, perianthii cœruleo-albi tubo oblongo, segmentis oblongo-lanceolatis tubo subtriplo longioribus, filamentis brevibus inæqualibus, antheris filamento longioribus, ovario globoso, stylo brevi cylindrico, stigmate capitato.

C. Luciliæ, *Boiss. Diagn.* part 5, p. 62; *Baker in Journ. Linn. Soc.* vol. xi. p. 436.

C. Forbesii, *Baker in Journ. Linn. Soc.* loc. cit.

This is one of the most valuable and interesting additions to our list of early-flowering Spring bulbs that has been made for a long time. I quite agree with Mr. Elwes, who writes of it (*Gardeners' Chronicle*, 1879, p. 379): "I can say with confidence that it is one of the best, if not the very best of all its class, far surpassing any of the Squills, and apparently as hardy and as easy to increase as *Scilla sibirica*." Now that we know the plant pretty thoroughly in a living state, I do not wish any longer to attempt to separate my *Chionodoxa Forbesii*, discovered by the late Professor Edward Forbes on the Lycian Taurus, or the white-flowered Cretan plant gathered by his fellow-explorer, Lieutenant Spratt, on the summit of Mount Ida, from the Anatolian *C. Luciliæ* of Boissier, which represents a starved dwarf one-flowered condition of the species; and I am inclined also to believe that, in a broad botanical sense, the Cretan *C. nana* and *C. cretica* are not more than varieties of the same species. The former, however, is in cultivation, and it is much inferior to *C. Luciliæ* in horticultural effect. Our present plant was discovered by Boissier, in June, 1842, flowering amongst the melting snows

of the western Tmolus, above Bozdagh, at an elevation above sea-level of 7000 feet. It was introduced into cultivation by Mr. G. Maw, from one of whose letters I cite the following account of the circumstances under which he found it:—"The specimens were obtained the first week in May, 1877, in ascending the Nymph Dagh, east of Smyrna, at elevations of from 3000 to 4300 feet. At the lower level it was out of flower, but near the summit of the mountain a great mass of it was met with in full splendour, forming one of the most sumptuous displays of floral beauty I ever beheld; a mass of blue and white resembling *Nemophila insignis* in colour, but more intense and brilliant. Close at hand were Tulips of several species, yellow Fritillaries, *Galanthus Elwesii*, yellow Gageas of several species, Croci, *Colchicum bulbocodioides*, Scillas, etc., a perfect paradise for the bulb collector and the botanist." Mr. Maw adds that the *Chionodoxa* has proved itself perfectly hardy in the open ground at Benthall during the late exceptionally severe winter, and that the bulbs which he brought home in 1877 have increased in size and strength.

Descr. *Bulb* ovoid, with brown membranous tunics. *Leaves* two or three to a stem, sheathing it for some distance above the base, lorate, fleshy, bright green, three to six inches long at the time of flowering, channelled down the face, cucullate at the tip. *Scape* attaining a length of four or six inches above the bulb, slender, terete. *Flowers* from one to ten, arranged in a very lax deltoid raceme, with minute membranous bracts, and cernuous pedicels. *Perianth* bright blue or rarely entirely white, nine or twelve lines long, with an oblong tube, and six spreading oblong-lanceolate segments under a quarter of an inch broad. *Filaments* flat, white, unequal; the larger a sixth of an inch, the smaller an eighth of an inch long, touching edge to edge, but not forming a distinct corona, as in *Puschkinia*. *Anthers* linear, cleft at the tip, protruding out of the cup formed by the filaments. *Ovary* blue, sessile, globose, with a short cylindrical style and a capitate stigma.—*J. G. Baker.*

Fig. 1, a flower opened out, *natural size*; fig. 2, two of the stamens and a portion of the perianth-tube; fig. 3, a stamen, viewed from outside; fig. 4, pistil; fig. 5, horizontal section of ovary:—*all enlarged.*



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Tab. 6434.

CINCHONA Calisaya, vera.

Native of Bolivia and Peru.

Nat. Ord. Rubiaceæ.—Tribe Cinchoneæ.

Genus Cinchona, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 32).

Cinchona *Calisaya*; foliis oblongis v. obovato lanceolatis obtusis basi attenuatis rarius utrinque acutis glabratis nitidis v. subtus pubescentibus, axillis nervorum scrobiculatis, capsula ovata corollam longitudine æquante, seminibus margine crebre fimbriato-denticulatis.

C. Calisaya, *Weddell, Hist. Nat. des Quinquinas*, p. 30.

Var. *a. Calisaya vera*, arbor, foliis ellipticis v. oblongo v. lanceolato-obovatis obtusis. *Weddell*, l. c. t. 3, 4, 4 bis, & 28 f. 1-4.

Calisaya javanica, *Howard, Quinology of the East Indian Plantations*, t. viii.

The very interesting plant here figured, is the true famous 'Calisaya' fever-bark, of which a remarkable variety (*Josephiana*) is represented in Plate 6052 of this work. It very closely agrees with the original specimens of *C. Calisaya* collected by the author of the species, the late eminent botanist and traveller Dr. Weddell, in the province of Carabaya in Peru. Like its congeners, this species varies very much in the size, shape, and texture of the leaves. Mr. Howard identifies this form with that called 'Schuhkraft's Calisaya,' figured in his 'Quinology,' Plate VIII. The seeds were received by Mr. Howard from India, where thousands of acres are under cultivation with this invaluable plant. The *C. Calisaya* yields the most important bark for medicinal purposes of all the species—that known as the yellow bark; and it is also that the obtaining of which for cultivation in India, was the principal object of Mr. Markham's famous journey to the border-land of Bolivia and Peru in 1860. From the Eastern slope of the Andes in that region, Mr. Markham, assisted by his gardener, Mr. Weir, brought 450 living plants of *Cinchona*, chiefly belonging to this species, to the Pacific coast, and thence to England, and the survivors to India; where, however, owing to many delays attending the transport, but few arrived in a living state. The diffi-

culties, and indeed perils, encountered by Mr. Markham in this journey, are described in his 'Travels in Peru and India,' a work containing not only a fund of varied information, regarding the *Cinchona* trees and the conditions under which they grow in the Andes, and were introduced into India, but a deeply interesting account of the extinction of the Incas in Peru, and of the execrable treatment they and the Indians received under the rule of their conquerors, the Spaniards.

Like the two other Cinchonas figured in this work, namely, the variety of this mentioned above, and *C. officinalis*, t. 5364, the *C. Calisaya* has been flowered for the first time in this country by J. E. Howard, Esq., F.R.S., of Tottenham, in whose conservatory it forms a small tree, eight to nine feet high, blossoming in March. Besides being a successful cultivator of this interesting genus, Mr. Howard has the well-sustained reputation of being an enlightened philanthropist, who has energetically aided the Indian Government in its endeavours to extend the propagation of the Fever-bark trees, and to ascertain the value of their properties; whilst as a scientific man he has, by his careful researches into the origin and history of their species and varieties, and his beautiful illustrated works, produced and circulated regardless of labour and cost, earned the gratitude alike of botanists and pharmacists.

Descr. A lofty tree, with an erect or ascending trunk often twice as thick as the human body, and a leafy crown overtopping almost all the trees of its native forests; bark thick, longitudinally and transversely fissured; branches spreading. *Leaves* opposite, oblong-elliptic or obovate-lanceolate, often large and broad, glabrous and shining above, beneath with pale veins, in the axils of which are rough depressions; petiole short. *Stipules* oblong, obtuse, quite entire, connected. *Panicle* large, diffuse, tomentose; peduncles square and compressed, main ones opposite, spreading, secondary and ultimate ones opposite or alternate; bracts minute, ovate, acute. *Flowers* very numerous. *Calyx* minute, 5-toothed. *Corolla* rose-red, tube half an inch long, tomentose, as are the spreading lobes. *Capsule* ovoid, acute, brown. *Seeds* yellow; wing elliptical-lanceolate, subacute at both ends, lacerate on the margin.—*J. D. H.*

Fig. 1, Flower cut longitudinally; 2, stamens; 3, stigmas:—*all enlarged.*



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Tab. 6435.

LAMPROCOCCUS Weilbachii.

Native of Brazil.

Nat. Ord. Bromeliaceæ.—Tribe Ananasseæ.

Genus Lamprococcus; *Beer Fam. Brom.* p. 103.

Lamprococcus *Weilbachii*; acaulis, foliis productis 12–20 dense rosulatis loratis pedalibus vel sesquipedalibus nitide viridibus supra basin dilatatum integris apice deltoideis cuspidatis, pedunculo subpedali erecto foliis bracteiformibus adpressis superioribus igneis occulto, floribus in paniculam laxam dispositis, ramis laxis brevibus patulis pauciflоris spicatis subsecundis bracteis magnis igneis lanceolatis suffultis, bracteis floralibus minutis, calycis semipollicaris rubro-violacei tubo oblongo, segmentis latis brevibus rotundatis cuspidatis, petalis parvis rubellis lingulatis basi squamatis, genitalibus petalis brevioribus.

L. Weilbachii, *E. Morren in Bely. Hort.* 1861, p. 305, cum icone; *Regel Gartenfl.* vol. xvi. p. 98, tab. 539.

L. Laurentianus, *K. Koch*; *E. Morren in Bely. Hort.* 1861, p. 312.

Æchmea Weilbachii, *F. Dietr. in Ind. Semin. Hort. Bot. Copen.* anno 1854; *Rafarin in Rev. Hort.* 1870, p. 171, cum icone.

This is one of the most striking of the cultivated Bromeliads; for, although in *Lamprococcus* and *Æchmea* the individual flowers are smaller and less showy than in *Billbergia*, the bright red rachises and bracts of the present plant, in combination with its bright green leaves and reddish-violet calyx, which all preserve their colour for a long time, make it an effective species for decorative purposes. The corolla, however, is small and by no means showy, and soon fades to a brownish tinge. It has been in cultivation a long time, but is still rare in this country. It was first described from a specimen that flowered in 1854 in the Botanic garden at Copenhagen; and again from a plant introduced about 1860 from Brazil, by Monsieur de Jonghe, of Brussels. Our present drawing was made from a specimen that flowered lately in the Kew collection.

Descr. Produced *leaves* twelve to twenty, in a dense sessile utricular rosette, lorate, a foot or a foot and a half

long, about three inches broad at the dilated deltoid clasping base, where it is sharply toothed, entire above the base, thin in texture for a Bromeliad, an inch or an inch and a half broad at the middle, bright green on both sides, faintly lineate down the back, deltoid-cuspidate at the tip. *Peduncle* about a foot long, erect, hidden by its lanceolate adpressed erect imbricating scariose bract-leaves, of which the upper are bright red. *Panicle* half a foot long, with several distant short spreading few-flowered spicate subsecund branches, subtended by bright red scariose lanceolate bracts as long as themselves; rachises, as in the other species of *Lamprococcus*, bright red and quite glabrous; flower-bracts minute-round, navicular, not cuspidate. *Calyx* half an inch long, the reddish-violet oblong tube longer than the round-cuspidate spirally-twisted segments. *Petals* lingulate, obtuse, red, half an inch long, with a pair of small cuneate dentate scales at the base. *Stamens* and *style* shorter than the petals; *anthers* small, oblong; *stigmas* slightly spirally twisted.—*J. G. Baker.*

Fig. 1, An entire flower, *natural size;* fig. 2, calyx-tube, with a single segment; fig. 3, petal and stamen, viewed from inside the flower; fig. 4, scale from base of petal; fig. 5, two stamens; fig. 6, stigmas; fig. 7, horizontal section of ovary; fig. 8, an ovule:—*all more or less enlarged.*



H.T.D. del. J.N. Fitch, lith.

Vincent Brooks Day & Son, lith.

Tab. 6436.

HYMENOCALLIS macrostephana.

Native Country unknown.

Nat. Ord. Amaryllidaceæ.—Tribe Pancratieæ.

Genus Hymenocallis, *Salisb.*; (*Kunth, Enum.* vol. v. p. 664).

Hymenocallis (*Choretis*) macrostephana; bulbo ovoideo longicollo tunicis brunneis membranaceis, foliis 8–9 synanthiis oblanceolatis viridibus 2–3-pedalibus, scapo robusto ancipiti, umbellis 6–10-floris, bracteis exterioribus deltoideis interioribus lanceolatis, pedicellis brevibus, ovario semipollicari, perianthii albi tubo tripollicari, segmentis linearibus patulis tubo paulo longioribus, coronâ bipollicari infundulari ore dentato flore expanso subpatulo, filamentorum parte libera pollicari incurvato, antheris parvis luteis.

H. macrostephana, *Baker in Gard. Chron.* 1879, p. 430.

We received this from two sources at the early part of the present year. First from Sir Philip Egerton, who had it from a continental nursery under the name of *Pancratium fragrans*, and who noticed that it was quite different from the plant properly so called, which is a variety of *Hymenocallis speciosa*; and afterwards from Mr. Woodbridge, gardener to the Duke of Northumberland at Sion House, who has grown it for some time there. We have not been able, so far, to trace out further its history, or to ascertain its native country. Its nearest ally is evidently the Mexican *Choretis glauca* of Herbert, and the two together form a group midway between *Ismene* and the typical species of *Hymenocallis*, such as *speciosa* and *caribæa*, in which the corona is much smaller, and the free portion of the filaments proportionately larger. The flower is pure white and sweet-scented, and it certainly is one of the most valuable of all the Pancratieæ for decorative purposes. It flowers in February and March.

Descr. *Bulb* ovoid, two inches in diameter, with brown membranous tunics and a long neck. *Leaves* eight or nine to a bulb, cotemporary with the flowers, aggregated in a basal rosette, oblanceolate, loosely arcuate, two or three feet long, two or three inches broad three-quarters of the way up,

narrowed gradually to an inch above the clasping base; the face bright green, the back paler green. *Scape* much shorter than the leaves, ancipitous, an inch in diameter. *Umbel* six- to ten-flowered; pedicels very short; outer spathe-valves deltoid; inner lanceolate. *Flowers* pure white, sweet-scented; ovary oblong-trigonous, half an inch long; perianth-tube three inches long, green in the lower part; segments linear, rotate, a little longer than the tube, half an inch broad. *Corona* funnel-shaped, two inches in length, and about the same in diameter at the irregularly-toothed throat, where it spreads a little when the flower is fully expanded; free portion of the filaments abruptly incurved, as in *Ismene*, about an inch long; anthers linear, yellow, under half an inch long. *Style* protruded an inch and a-half or two inches from the corona, declinate, greenish; stigma capitate.—*J. G. Baker*.

Fig. 1, Horizontal section of the scape :—*a little enlarged.*



H T.D. del. J.N Fitch Lith.

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Tab. 6437.

PRIMULA ROSEA.

Native of Kashmir.

Nat. Ord. Primulaceæ.—Tribe Primuleæ.

Genus Primula, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 631).

Primula *rosea*; glabra, efarinosa, foliis confertis subsessilibus obovato-lanceolatis acutis crenulatis supra viridibus subtus pallidioribus marginibus vernatione revolutis, scapo robusto, involucri bracteis carnosis lanceolatis acuminatis basi in auriculam apice rotundatam oblongam deorsum productis, pedicellis bracteas æquantibus v. excedentibus, floribus confertis roseis erectis, calyce ad medium 5-fido, lobis subulatis acutis, corollæ tubo calycem paulo excedente, limbi explanati late rosei segmentis planis cuneato-obcordatis, lobis oblongis apice rotundatis, sinu acuto, fauce nuda.

P. rosea, *Royle, Ill. Himal. Pl.* p. 311, t. 75, f. 1; *Duby in DC. Prodr.* vol. iii. p. 41.

This humble plant proved the most attractive novelty in the spring Horticultural shows of the present year; and, indeed, it would be difficult to single out any early-flowering hardy plant, except perhaps the blue Gentian of the Alps, which forms a more striking object of its kind. No Primula heretofore cultivated grows in the same compact manner and has such brilliantly-coloured flowers, which are almost pure carmine when first expanded, and gradually become pale, with a shade of purple. The species has been long known to Indian botanists and natives of the extreme Western Himalayas, from the district of Kulu eastward to Afghanistan; Kashmir being its head-quarters, where it was discovered by the late Dr. Royle's collectors, and afterwards gathered by Falconer, Thomson, Edgworth, and lately by Dr. Aitchieson, to whom the Royal Gardens are indebted for the seeds which were widely distributed, and from which, I believe, all the plants hitherto cultivated have been grown. We received the first flowering specimen from Mr. Ware, of Tottenham; a few days afterwards it flowered at Kew and in many other collections. It is quite an Alpine species. Thomson gathered it at 10,000 to 12,000 feet, and Griffith

found it in Affghanistan in snowy ravines at 11,000 feet. Dr. Aitchieson has sent dried specimens of what is either a larger form or distinct species from a much lower level, 8,500 feet, at Gulmarz, in Kashmir, and these have much larger obovate, oblong, and sharply toothed leaves, with rounded apices. In its native mountains it flowers from June to August, but in England as early as March and April.

DESCR.—Glabrous, not mealy. *Leaves* densely tufted, obovate-lanceolate, acute, sessile, one to two inches long, crenulate, deep green above, paler beneath, margins revolute when young. *Scapes* many, stout, longer than the leaves, four- to ten-flowered. *Involucral bracts* erect, appressed, thick, lanceolate, acuminate, produced downwards into an oblong obtuse auricle. *Pedicels* equalling or exceeding the bracts. *Calyx* one-third of an inch long, tube cylindric, cleft to the middle into five subulate erect lobes. *Corolla* tube exceeding the calyx; limb flat, one-half to two-thirds of an inch in diameter, clear bright rose-carmine; segments cuneate-obcordate, lobes rounded, with a deep acute sinus; throat a little swollen, smooth.—*J. D. H.*

Fig. 1, Top of scape and bracts; longitudinal section of flower;—*both enlarged.*



H.T.D. del. J.N.F. Lith.

Vincent Brooks Day & Son Imp.

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Tab. 6438.

DENDROBIUM Findleyanum.

Native of Burmah.

Nat. Ord. Orchideæ.—Tribe Dendrobieæ.

Genus Dendrobium, *Swartz ; (Lindl. Gen. et Sp. Orchid.* p. 74).

Dendrobium *Findleyanum*, caulibus articulatis, internodiis 2–3-pollicaribus e basi gracili clavatis inferne cylindraceis vaginatis parte incrassato obovoideo nudo sulcato, foliis lineari-oblongis acutis submembranaceis caducis, pedunculis lateralibus 1–2-floris, bracteis parvis appressis, pedicellis gracilibus 2–3-pollicaribus, floribus 3-poll. diamet. labello flavo excepto albis roseo suffusis, sepalo dorsali lineari-oblongo acuto, lateralibus ascendentibus recurvis paulo latioribus, petalis patentibus late oblongis obtusis, labello breviter stipitato rotundato-cordato margine undulato, disco velutino callo basi obscuro.

D. Findleyanum, *Parish et Reichb. f. in Trans. Linn. Soc.* vol. xxx. p. 149. *Reichb. f. in Gard. Chron.* 1877, part i. p. 334.

When *Dendrobium crassinode*, Bens. and Reichb. f. (tab. nost. 5766) was first published in England, in 1869, it was considered, and very justly, as one of the most remarkable species then discovered, on account of the curiously-swollen internodes, which are not half the length but double the thickness of those of the present species. The latter, indeed, in respect of its internodes, form a link between that singular plant and *D. nodatum*, Reichb. f. (tab. 5470); and together with *Bensoniæ*, nob. (tab. 5679), and some others, forms a section of the genus of very distinct habit.

D. Findleyanum is one of the Rev. Mr. Parish's many Moulmein discoveries. It first flowered with Sir Trevor Lawrence in 1877; it had, however, been previously described from dried specimens and drawings, by Messrs. Parish and Reichenbach, in the thirtieth volume of the *Transactions of the Linnæan Society*. The specimen figured flowered in the Royal Gardens in March of the present year, and was one of Mr. Parish's many valuable donations to this establishment.

Descr. *Stems* two feet long, jointed throughout their length; joints green, two to three inches long, club-shaped

from a slender stalk-like base, which is one-fourth of an inch in diameter, and covered by the leaf-sheath; the club-shaped portion is grooved and often three-quarters of an inch diameter. *Leaves* three inches long by three-quarters of an inch broad, spreading, linear-oblong or oblong-lanceolate, acute or notched at the tip, wavy, bright green, sessile on the sheath. *Peduncles* lateral, short, green, one to two flowered; bracts small, appressed; pedicels two to three inches long, slender, pale rose coloured. *Flowers* three inches in diameter, white, suffused with rose red, except the lip. *Sepals* oblong-lanceolate, acute, the lateral recurved. *Petals* much larger and broader than the petals, apiculate. *Lip* when spread out broadly rounded, ovate or ovate-cordate, acute, membranous, margin wrinkled, surface tomentose, callus at the base obscure, dark orange yellow towards the centre, fading into golden yellow towards the margins. *Column* with two deep purple bands in front —*J. D. H.*

Fig. 1, Lip; 2, column :—both *enlarged*,


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TULIPA Schrenki.

Native of Central Asia.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Tulipa, *Linn.*; (*Baker in Journ. Linn. Soc.* vol. xiv. p. 275).

Tulipa *Schrenki*; bulbo ovoideo tunicis brunneis intus parce pilosis, caule puberulo unifloro 3-4-phyllo, foliis lanceolatis subglaucis facie glabris margine obscure ciliatis, perianthio erecto rubro vel luteo infundibulari segmentis conformibus obtusis, staminibus perianthio duplo brevioribus, antheris filamento glabro longioribus, ovario cylindrico-trigono, stigmatibus magnitudine mediocribus.

T. Schrenki, *Regel in Act. Hort. Petrop.* vol. ii. p. 439 and 452.

T. Gesneriana, *Baker in Journ. Linn. Soc.* vol. xiv. p. 284, *ex parte: Regel, Fl. Turkest.* vol. i. p. 138, *ex parte.*

This is a close ally of the old well-known *Tulipa Gesneriana* of Linnæus, from which so many of our garden forms have originated. It differs from *Gesneriana* mainly in the form of the flower, which is more funnel-shaped, with more spreading segments. In colour, like *Gesneriana*, it goes through a wide range of variation. Our wild specimens, gathered by Schrenk, have flowers of a uniform pale yellow. In the plant from which the drawing was made, which was sent to Kew by Dr. Regel, they were considerably larger and bright crimson with a yellow throat. It flowers with us at the beginning of April. It has been gathered in Turkestan by Lehmann and others, and in the Soongarian desert by Schrenk. Since the publication of my monograph of the genus in 1874, the Russian explorers, principally Dr. Albert Regel, have found eight new Tulips in Central Asia, *Kaufmanniana*, *Kolpakowskiana*, *triphylla*, *tetraphylla*, *Kesselringi*, *Korolkowi*, *Alberti*, and *turkestanica*.

Descr. *Bulb* ovoid, an inch in diameter, with brown membranous tunics, shortly pilose inside in the upper part. *Stem*

about half a foot long, bearing a single erect flower, and three or four lanceolate *leaves*, with a glabrous rather glaucous surface and obscurely ciliated margins, the lowest and largest in the cultivated specimens about four inches long and an inch and a half broad. *Peduncle* erect, puberulent, three or four inches long, *Perianth* yellow or bright red with a yellow throat, funnel-shaped, with more spreading segments than in *Gesneriana*, an inch long in the wild, nearly two inches in the cultivated specimens, all the segments similar, oblong, obtuse. *Stamens* half as long as the perianth; anthers lemon-yellow, longer than the glabrous filaments. *Ovary* cylindrico-trigonous, nearly as long as the stamens; stigmas middle-sized, a little broader than the diameter of the ovary.—*J. G. Baker.*

Fig. 1, First view of a stamen; 2, back view of the same—*enlarged.*



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Tab. 6440.

CAJANUS INDICUS.

Native of tropical Asia.

Nat. Ord. Leguminosæ.—Tribe Phaseoleæ.

Genus Cajanus, *DC.* (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 541).

Cajanus *indicus;* frutex, ramulis sulcatis foliis et inflorescentia tomentellis v. sericeo v. velutino-pubescentibus, foliis pinnatim 3-foliolatis, foliolis elliptico-lanceolatis acuminatis subtus pallidis nervosis resinoso-punctulatis, stipulis parvis subulatis caducis, stipellis minutis, floribus flavis v. purpureo-lineolatis in racemis axillaribus dispositis ebracteolatis, bracteis caducis, vexillo orbiculato reflexo, alis dimidiato-obovatis, carina obtusa, legumine lineari compresso basi et apice angustatis acuminatis 3–5-spermo, septis distinctis, seminibus compressis hilo laterali estrophiolato.

Cajanus indicus, *Spr. Syst. Veg.* vol. iii. p. 248; *Wight et Arn. Prod. Fl. Pen. Ind. Or.* p. 257; *Drury, Useful Plants of India,* p. 94.

C. bicolor, *DC. Cat. Hort. Monsp.* p. 85; *Prodr.* vol. ii. p. 406; *Lindl. Bot. Reg.* vol. 31, t. 31; *Wall. Cat.* n. 5577; *Carriere in Rev. Horticole,* 1874, p. 191.

C. *flavus, DC. l. c.*

Cytisus Cajan, *Linn. Sp. Pl.* p. 1041; *Roxb. Fl. Ind.* vol. iii. p. 325; *Jacq. Obs.* vol. i. t. 1.

C. pseudo-cajan, *Jacq. Hort. Vind.* vol. ii. t. 119.

Thora-poru, *Rheede, Hort. Mal.* vi. t. 13; *Plum. Ed. Burm.* t. 114, *f.* 2.

This, the Dal, or Dal urur of Bengal, is one of the most widely-diffused and valuable of tropical Pulses, being considered in India as next in rank to the Chick Pea (*Cicer arietinum*) and is in use amongst all classes of natives as a nutritious esculent. Its seeds are usually eaten mixed with rice; the dried wood affords a useful fuel; the charcoal made from it is in esteem for gunpowder, and the young shoots afford a good cattle-food. There are two principal varieties of it described by De Candolle as species, one Lal Toor (according to Drury) of the Hindoos (*C. flavus*, DC.), with yellow flowers and unspotted 2–3-seeded pods; the other, Paoud ke Toor, (*C. bicolor*, DC.) with red stripes on the standard and spotted 4–5-seeded pods. Roxburgh also describes two varieties, distinguishable chiefly by their size, of which the smaller ripens in half the time of the larger;

this latter is sown in alternate drills with millet (*Sorghum vulgare*) which ripens first, and is cut when the Toor is quite small. The larger form attains a height of eight feet and a circumference of twenty round the extremities of the branches, is sown in June, takes nine months to ripen, and yields six hundred-fold; the smaller Toor is only half that size, is sown in September, and yields only one hundred-fold. Though probably a perennial, the *Cajanus* is treated as an annual in India, because it does not produce a good second year's crop, and because the wood is so useful for fuel. It is also the best wood for procuring fire from friction.

Pigeon Pea and Doll are English names given to the Cajanus seeds in various parts of the world, and the yellow-flowered one (*C. flavus*) is that most esteemed in the West Indies, where it is called the No-eye Pea; whereas the *C. bicolor*, called Congo Pea, is coarser, takes long to boil when dried, and is used chiefly by the Negroes. Of late years its cultivation has been introduced on a large scale into Egypt, where it is known under the French and other names of Embrevade, Pois d'Angole, Pois de sept ans, Cytise des Indes, Woondo, Owendo, Mais Indien, Lentille des Soudan, etc. An account of it is given by M. Delchevalerie in the "Belgique Horticole" for 1873 p. 35, who describes it as three or four times more nutritious than beans or lentils.

The specimen here figured unites the two Candollean species, having the pure yellow flower and small stipellæ of *C. flavus*, and the spotted pods of *C. bicolor*; it was raised from seeds sent by Dr. King from the Calcutta Botanic Gardens, and flowered in March of the present year. It is a curous fact that, well and widely as this plant is known, its native country is undiscovered. Can it be still to be found in Western China, or Cochin-China? —*J. D. H.*

Fig. 1, wing; 2 and 3, keel; 4, stamens; 5, valve of pod; 6 and 3, side and hilum aspect of seed:—*all enlarged.*



M.S. del. J.N. Fitch Lith.

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Tab. 6441.

ÆCHMEA Mariæ-reginæ.

Native of Costa Rica.

Nat. Ord. Bromeliaceæ.—Tribe Ananasseæ.

Genus Æchmea, *R. & P.*; (*Baker in Trimen Journ.* 1879, p. 129).

Æchmea (*Chevalliera*) *Mariæ-reginæ;* acaulis, foliis basalibus 15–20 dense rosulatis lorato-lanceolatis acutis basi dilatatis subcoriaceis 2–3-pedalibus utrinque præsertim ad faciem inferiorem tenuiter lepidotis spinis marginalibus parvis crebris patulis instructis, pedunculo valido stricto subpedali albo-tomentoso bracteis pluribus lanceolatis reflexis spinoso-dentatis splendide coccineis prædito, floribus in spicam oblongam densam aggregatis, bracteis floralibus minutis lanceolatis membranaceis, ovario oblongo albo-lepidoto, sepalis æquilongis et latis obliquis valde imbricatis conspicue cuspidatis, petalis lingulatis sepalis duplo longioribus primum cæruleis demum rubris basi distincte bisquamatis, genitalibus inclusis.

Æ. Mariæ-reginæ, *H. Wendl. in Hamb. Gartenzeit* vol. xix. (1863), p. 32; *Regel, Gartenfl.* vol. xiii. (1864), p. 152; *Baker, in Trimen Journ,* 1879, p. 162.

This is botanically a near neighbour of *Æchmea* (*Chevalliera*) *Veitchii*, figured in the Botanical Magazine, tab. 6329. The leaves and spikes of the two plants are similar, but here the flower-bracts are reduced to a minimum, and the most effective part of the plant is the large bright red reflexing bract-leaves of the general peduncle. The present plant is a native of Costa Rica, where it is used at the feast of Corpus Christi for the decoration of the altars in the churches. Its local name is "Flor de Santa Maria," from which the scientific name has been taken. It has been in cultivation in Europe for nearly twenty years, but only flowers rarely. Our plate was drawn from a specimen that flowered with Messrs. B. S. Williams and Co., at Holloway, in April of this present year.

Descr. *Leaves* fifteen to twenty in a sessile utricular rosette, lorate-lanceolate, two or three feet long, three or four inches broad at the dilated clasping base, two or three inches in the middle, subcoriaceous in texture, thinly white

lepidote on both sides, especially on the under surface, narrowed gradually to a cuspidate tip, margined with crowded lanceolate small spreading brown prickles, which grow gradually less from the base of the leaf upwards. *Peduncle* about a foot long, stout, stiffly erect, clothed throughout with thin white lepidote tomentum, furnished with numerous reflexing persistent crimson lanceolate bract-leaves with toothed margins. *Flowers* in a dense oblong spike three or four inches long, each subtended by a minute lanceolate membranous bract. *Calyx* including the ovary half an inch long, clothed throughout with white tomentum; sepals about as broad as long, oblique, much imbricated, furnished with a large pungent cusp. *Petals* lingulate, half an inch long, blue when they first open, turning red as they fade, furnished each with a pair of minute fimbriated scales at the base. *Stamens* and *pistil* reaching to the summit of the petals.—*J. G. Baker.*

Figs. 1, and 2, entire flowers, *life-size*; fig. 3, a calyx-segment, of unusually irregular form; fig 4, a petal and a couple of stamens; fig. 5, two anthers, showing their insertion on the filament; fig. 6, stigmas and summit of style; fig. 7, horizontal section of ovary:—*all more or less enlarged.*



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Tab. 6442.

LOASA prostrata.

Native of the Chilian Andes.

Nat. Ord. Loaseæ.

Genus Loasa, *Juss.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 804).

Loasa *prostrata*; herba prostrata, setosa, caulibus robustis flexuosis, foliis oppositis breviter crasse petiolatis summis sessilibus ovato-rotundatis profunde cordatis 3-lobis scaberidis utrinque sinubus rotundatis, lobis lobulatis et dentatis, dentibus setosis, nervis prominentibus, floribus axillaribus et apices versus ramulorum divaricato-paniculatis, pedunculis robustis, calycis lobis ovato-oblongis lanceolatis acutis setoso-dentatis, petalis aureis cymbiformibus, squamis conicis albis infra medium rubris, ovario turbinato, seminibus ovoideis maximis, testa lævi.

L. prostrata, *Don in Edinb. Phil. Journ.* 1841, 274; *Gay. Fl. Chilen.* vol. ii. p. 454.

The Genus *Loasa* has its head-quarters in the southern Andes, no less than thirty-one species being described as natives of Chili alone, where they are well known for their stinging hairs, which are far more irritating than those of the nettle. The present species has more botanical than horticultural interest, and is a native of the Southern Cordillera, where it was first discovered by Dr. Gillies, half a century ago, and where it has been since collected by Bridges and Cuming. It seems to be a scarce plant, and not to have been found by Claude Gay, the eminent Chilian traveller and botanist, and author of the Flora Chilina, who, in the latter work, quotes Don's description as his only authority for the plant.

Loasa prostrata seems to be perfectly hardy, having withstood the protracted winter of 1878-9 without protection in the herbaceous ground at Kew, where it flowers in September.

Descr. Clothed with stinging hairs. *Stems* branching from the base, stout, fleshy, prostrate, flexuous, green. *Leaves* opposite, two to two and a half inches long, lower on very stout short petioles, upper sessile, all broadly ovate, deeply cordate, 3-lobed to below the middle with rounded sinus,

scabrid on both surfaces; lobes variable in length, the middle longest and sometimes produced, irregularly lobulate and toothed, teeth setose; nerves very strong beneath, radiating from the top of the petiole; upper leaves less deeply lobed. *Flowers* one inch in diameter, axillary, and in leafy terminal divaricating few-flowered panicles; peduncles very stout, longer than the leaves, spreading horizontally. *Calyx-lobes* oblong-lanceolate, acute, toothed, rather shorter than the petals. *Petals* oblong, boat-shaped, yellow. *Scales* broadly conial, 2-fid, with 3 bristles at the base, scarlet below the middle, white above it. *Staminodes* curved, with a bristle below the club-shaped tip. *Stamens* about 12 in a bundle. *Ovary* turbinate. *Seeds* very few, large, oblong; testa smooth.—*J. D. H.*

Fig. 1, Vertical section of flower; 2, front, 3, back, and 4, side view of scale; 5, staminode; 6, bundle of stamens:—*all enlarged.*



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Tab. 6443.

COLCHICUM MONTANUM.

Native of the Mediterranan Region.

Nat. Ord. Liliaceæ.—Suborder Melanthiaceæ.

Genus Colchicum, *Linn.*; (*Kunth, Enum.* vol. iv. p. 138).

Colchicum *montanum*; cormo ovoideo magnitudine mediocri, foliis synanthiis falcatis lanceolatis vel linearibus hyemalibus vel vernalibus sæpissime tribus, floribus sæpissime pluribus interdum 1–2-nis, perianthii tubo 2–3-pollicari, limbi segmentis lilacinis oblongis vel oblanceolatis, staminibus limbo subduplo brevioribus filamentis basi luteis strumoso-incrassatis, antheris purpureis, stigmatibus minutis subcapitatis.

C. montanum, *Linn. Sp. Plant.* edit. ii. p. 485, excl. syn.; *Reich. Ic. Fl. Germ.* tab. 424, figs. 940 to 943.

C. bulbocodioides, *M. Bieb. Fl. Taur. Cauc.* vol. i. p. 293; *Kunth, Enum.* vol. iv. p. 142.

C. Ritchii, *R. Br. in App. Denh. et. Clapp.* p. 241; *Kunth, Enum.* vol. iv. p. 145.

C. Bertolonii, *Stev. in Act. Nov. Mosq.* vol. vii. p. 268; *Parlat. Fl. Ital.* vol. iii. p. 190.

C. Cupani, *Guss. Prodr. Sic.* vol. i. p. 452.

As I have gone fully into the history and synonymy of this plant in a paper which is now printing in the Journal of the Linnean Society, I cite here only a few of the leading synonyms. I feel satisfied that there is only one species covered by all these names, and have ascertained, by inspection of the Linnean herbarium, that it is this plant which was sent by Loefling from Spain to Linnæus, and which furnished the basis of his idea of *Colchicum montanum*, although some of the synonyms cited in the "Species Plantarum" do not really refer to it. The species ranges from Portugal eastward by way of Algeria and Italy to Egypt, Syria, Armenia, Kurdistan, and the Caucasus. The genus *Monocaryum* of Endlicher and Kunth is founded upon what is simply a monstrosity of this same plant, and I

August 1st, 1879.

do not think that Boissier's *Colchicum ægyptiacum* and *crocifolium* are more than Oriental varieties of the same species with more numerous flowers to a corm and narrower perianth-segments. Although the plant has so wide an area, it is very little known in cultivation. In England it appears in early spring with the Snowdrops and Crocuses. The drawing was made from material furnished by Mr. George Maw, who gathered it along with *Chionodoxa Luciliæ* on the Nymph Dagh, near Smyrna, under conditions explained in detail under our plate of that species, tab. 6433.

Descr. *Corm* middle-sized, about an inch in diameter when fully developed, furnished with a firm brown tunic, and a neck two or three inches long, which is invested with a tight-fitting membranous sheath, and reaches to the surface of the ground. *Leaves* generally three in number, cotemporary with the flowers, lanceolate or linear, falcate, reaching about as high as the flowers, finally half a foot long and an inch broad. *Flowers* two or three inches above the soil, lilac-purple or nearly white, with a filiform tube, and a limb an inch or an inch and a half long, with oblong or oblanceolate segments. *Stamens* about half as long as the perianth-segments; filaments yellow and thickened at the base; anthers small, oblong, versatile, purplish. *Styles* reaching up to the anthers; stigmas minute, nearly capitate. *Capsule* produced in summer, oblong, about an inch long.—*J. G. Baker.*

Fig. 1, a flower cut open, *life size*; fig. 2, an anther, facing outwards; fig. 3, an anther viewed from the back; fig. 4, a plant with the leaves and flower-wrapper stripped away so as to show the ovary and long styles; fig. 5, stigmatose tip of style:—*all more or less enlarged.*



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Tab. 6444.

BOMAREA ACUTIFOLIA,

var. EHRHENBERGIANA.

Native of Mexico and Guatemala.

Nat. Ord. AMARYLLIDACEÆ.—Tribe ALSTROMERIEÆ.

Genus BOMAREA, *Mirbel ;* (*Kunth, Enum.* vol. v. p. 787).

BOMAREA *acutifolia*, var. *Ehrhenbergiana ;* caule glabro late volubili, foliis oblongis acutis petiolo crispato præditis facie viridibus glabris dorso pallidioribus pubescentibus, floribus 10–20 simpliciter umbellatis, bracteis magnis ovatis, pedicellis glandulosis flore paulo longioribus raro bracteolatis, ovario glanduloso, perianthii limbo 12–15 lin. longo, segmentis exterioribus oblanceolatis obtusis rubellis, interioribus paulo longioribus obovato-unguiculatis luteis brunneo punctatis, genitalibus inclusis.

B. acutifolia, *var.* Ehrhenbergiana, *Kunth, Enum.* vol. v. p. 794.

There are at least two well-marked forms included by Kunth under his definition of *Bomarea acutifolia*, which have quite as good a claim to be regarded as distinct as many of the accepted species of the group of which *B. edulis* is the oldest and best known representative. The typical *B. acutifolia* of Herbert (which has already been figured in the BOTANICAL MAGAZINE, tab. 3058, and previously by Link and Otto, under the name of *Alstromeria acutifolia*), is much less valuable for decorative purposes than the subject of the present notice. It is less robust in habit, with narrower leaves, less hairy on the under surface, and bears fewer flowers, in a much less compact umbel, the pedicels of which are often compound and lengthened out to three or four inches. We have numerous specimens of the present plant in the Kew herbarium from Mexico (Hartweg 520, Linden 41, Bourgeau 2952, etc.), and from Guatemala, where it was found long ago by Skinner, and where Messrs. Salvin and Godman have lately gathered it on the Volcan

de Fuego, at an elevation of 8300 feet above sea-level. Our plate was drawn from specimens that flowered with Mr. Elwes at Cirencester in the spring of the present year.

Descr. *Stems* stout, wide-climbing, glabrous. *Leaves* oblong, acute, three or four inches long, about half as broad, abruptly narrowed to a short crisped petiole, green and glabrous on the upper surface, paler and densely hairy on the ribs beneath. *Flowers* up to twenty in a dense umbel, with several large ovate leafy bracts; pedicels slender, densely glandulose, rarely bracteolate, always simple, not more than an inch and a half or two inches long. *Ovary* triquetrous, six-grooved, glandulose; perianth-limb an inch or an inch and a quarter long; outer segments oblanceolate, obtuse, reddish; inner segments obovate unguiculate, bright yellow, with copious minute spots of brown over the face. *Stamens* and *pistil* rather shorter than the inner segments of the perianth; filaments and style glandular in the lower part; anthers oblong.—*J. G. Baker.*

Fig. 1, an inner segment of the perianth-limb; fig. 2, an outer segment, *both natural size;* fig. 3, a stamen; fig. 4, complete pistil, with its inferior ovary:—*both enlarged.*



A.B. del, J.N. Fitch, Lith.

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Tab. 6445.

LASIOPETALUM Baueri.

Native of Southern Australia.

Nat. Ord. Sterculiaceæ.—Tribe Lasiopetaleæ.

Genus Lasiopetalum, *Smith ;* (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 228).

Lasiopetalum *Baueri ;* carno-tomentosum, ramulis gracilibus, foliis oppositis subopppositis et 3-nis subsesillibusl inearibus obtusis coriaceis marginibus recurvis, floribus parvis in racemis brevibus recurvis paucifloris dispositis, bracteis viridibus calyce ter brevioribus, calyce late campanulato infra medium 5-fido, lobis triangularibus subacutis extus tomentosis intus puberulis v. glabratis, petalis minutis obovatis, filamentis anthera lanceolata apicem versus 2-rimosa brevioribus, ovario dense stellatim tomentoso, stylo ima basi pubescente.

L. Baueri, *Steetz in Plant. Preiss.* vol. ii. p. 339; *F. Mueller, Pl. Vict.* vol. i. p. 142 ; *Benth. Fl. Austral.* vol. i. p. 263.

A very elegant little greenhouse shrub, covered profusely with pearly white flowers, to which no drawing on white paper can do justice. It belongs to a large and peculiarly Australian genus, embracing twenty species, which is confined to the extra-tropical regions of the continent, across which it extends from east to west. Of these some are rather handsome shrubs, as the *L. macrophyllum*, Graham, (Tab. 3908), but most of them partake of the dusty hue of so many of the plants of the dry climate of Australia.

L. Baueri was raised from seeds sent to the Royal Gardens by Baron Sir Ferdinand Mueller in 1868, and flowers annually in spring on the shelves of the temperate House ; it has a wide range in its native continent, from the Blue Mountains in New South Wales, to Victoria and South Australia.

Descr. A slender much-branched shrub, two to three feet high, with erect twiggy branchlets, covered everywhere with minute stellate pubescence, which turns of a rusty brown colour when dry. *Leaves* very shortly petioled, opposite,

subopposite, and almost whorled, one and a half to three inches long, by one sixth to one third of an inch broad, coriaceous, linear, obtuse, margins recurved, puberulous and deeply channelled above, tomentose, and with a strong midrib beneath. *Racemes* axillary, shorter or rather longer than the leaves, horizontal or decurved, four to six-flowered; pedicels one fourth to one third of an inch long; bracts linear-oblong, about one third as long as the calyx, to which they are appressed. *Calyx* broadly campanulate, one third of an inch in diameter, cleft to below the middle into five triangular subacute lobes, obscurely angled, pearly white tinged with pink, tomentose externally, pubescent or nearly glabrous within. *Petals*, minute obovate white scales, shorter than the filament. *Stamens* included, conniving; filaments shorter than the lanceolate-acute anthers, which open by subterminal slits. *Ovary* globose, densely stellate-tomentose; style glabrous, except at the very base. *Capsule* globose, included in the calyx.—*J. D. H.*

Fig. 1, Vertical section of flower; **2**, petal; **3**, stellate hairs; 4 and 5, front and back view of stamens; 6, ovary; 7, transverse section of the same:—*all magnified.*



J.N. Fitch Lith

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TAB. 6446.

ARISÆMA NEPENTHOIDES.

Native of the Eastern Himalaya.

Nat. Ord. AROIDEÆ.—Tribe ARISAREÆ.

Genus ARISÆMA, *Mart.*; (*Schott Prodr. Syst. Aroid.* p. 24).

ARISÆMA *nepenthoides*; foliis 2-nis radiatisectis petiolis pedunculoque transverse variegatis, foliolis 5 late v. anguste elliptico-lanceolatis lateralibus interdum basi inæqualateris extus dilatatis, omnibus basi sessili longe angustata apice tenuiter caudato-acuminato, marginibus planis v. undulatis, spathæ elongatæ tubo cylindraceo, fauce aperta, limbi erecti lamina ovato-lanceolata acuminata supra medium incurva tubo æquilonga, basi utrinque in auriculam amplam rotundatam recurvam vittatam nitidam dilatata, spadice erecto exserto, appendice stipitata cylindracea obtusa, basin et apicem versus incrassata, vertice rotundata.

A. nepenthoides, *Mart. in Flora*, 1831, p. 458; *Schott Prodr. Syst. Aroid.* 48.

ARUM nepenthoides, *Wall. Tent. Fl. Nep.* p. 26, t. 18; *Cat. Herb. Ind. Or.* n. 8919.

Already several species of Himalayan *Arisæma* have been figured in this work; and the list of those in cultivation at Kew and elsewhere is by no means thereby exhausted, for thanks to the exertions of Mr. Gammie, and Elwes especially, at least six unfigured species have lately been introduced into, and flowered in England. Of these the subject of the present plate is by no means the finest, for I shall soon have the opportunity of figuring the two gigantic species, *A. utile* and *A. Hookerianum*, which have both flowered with Mr. Elwes at Preston. *Arisæma nepenthoides* is remarkable for the broad ear-like strongly-coloured appendages at the base of the lamina of the spathe, which curve backwards and downwards and are very variable in length and breadth. I am indebted to Mr. Elwes for the specimen figured, which flowered in his garden in March of the present year. It is abundant in Nepal and Sikkim, at 9–11,000 feet elevation.

DESCR. *Leaves* two to each plant, one to two feet high; petiole rather slender, pale green, transversely barred, dull red-purple; leaflets five, radiating horizontally from the top

of the petiole, six to ten inches long by one to three and a half broad, narrowly elliptic-lanceolate, narrowed to the sessile base, tips drawn out into filiform points, bright green, with paler flat or undulated margins; midrib usually red; two outer leaflets like the others, or unequal at the base, being dilated outwardly. *Scape* equalling or shorter than the petioles, transversely barred like these, and usually stouter. *Spathe* three to seven inches long; sheathing portion cylindric, dirty green, striped with dull red; lamina as long as the sheath, elliptic-ovate, acuminate, the upper half curving forwards and drooping, base on each side dilated into a recurved rounded auricle, which is very dark green, with broad red-brown margins, and dark elongated spots; back of spathe pale yellow-brown, irregularly spotted. *Spadix* erect. *Ovaries* close-set, dark green, with short conical straight dark styles. *Appendage* stipitate, elongate, terete, swollen at the rounded base and tip, gradually narrowed towards the centre, pale yellow, almost wholly exserted.—*J. D. H.*

Fig. 1, Spadix; 2, ovary; 3, the same cut vertically:—*all enlarged.*



H.T.D del. J.N.Fitch.Lith.

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TAB. 6447.

DRACÆNA FLORIBUNDA.

Native Country unknown.

Nat. Ord. LILIACEÆ.—Tribe DRACÆNEÆ.

Genus DRACÆNA, *Vand.*; (*Baker in Journ. Linn. Soc.* vol. xiv. p. 523.)

DRACÆNA *floribunda;* frutex 8–10–pedalis, caule ramoso, foliis dense rosulatis loratis acuminatis 3–4–pedalibus utrinque viridibus margine concoloribus costâ superne obscura centralibus ascendentibus exterioribus falcatis, pedunculo brevi valido, racemis cylindricis pluribus in paniculam cernuam aggregatis, bracteis minutis deltoideis, pedicellis singulis brevibus erecto-patentibus, perianthii viriduli cylindrici tubo campanulato, segmentis ligulatis tubo triplo longioribus, stylo breviter exserto, stigmate trilobato.

This is one of the largest and most striking of all the known Dracænas. For many years the plant from which our drawing was made has been one of the most conspicuous members of the group of arborescent Liliaceæ in the Palm-house at Kew, but it has never flowered until this present summer. Now that we know it completely, it proves to be a well-marked new species, remarkable for its very large drooping panicle and the great number of its crowded cylindrical racemes. We received it many years ago from the Botanic Garden at Mauritius, when Mr. Duncan was Curator there, without any precise information as to its native country. Mr. Horne, the present Director of the Mauritius Garden, thinks it very likely the plant was brought from Rodriguez, but it was not seen in that island by Professor Bayley Balfour. Its nearest ally is the West African *Dracæna arborea* of Link.

DESCR. *Trunk* in the cultivated specimen drawn six or eight feet high, tuberous at the base as in a *Beaucarnea*, branching low down. *Leaves* fifty or sixty, crowded in a dense rosette, the inner ones ascending, the outer reflexing, lorate, acuminate, three or four feet long, three inches or three inches and a half broad at the middle, narrowed to an

inch and a half or two inches above the dilated base, moderately firm in texture, bright green on both sides, concolorous at the margin, the midrib distinct down the back in the lower half only. *Panicle* drooping, shortly-peduncled, three or four feet long, made up of from fifteen to twenty drooping cylindrical racemes a foot or more long and a couple of inches in diameter; bracts very minute, deltoid, membranous; pedicels all solitary, stiffly erecto-patent, a quarter or a third of an inch long. *Perianth* greenish, cylindrical, above half an inch long; tube campanulate; segments ligulate. *Stamens* inserted at the throat of the perianth-tube; filaments filiform, rather shorter than the perianth-segments; anthers small, oblong. *Ovary* oblong; style a little exserted; stigma obscurely three-lobed.—*J. G. Baker.*

Fig. 1, a single flower, opened out, *magnified two diameters;* fig. 2, pistil, *magnified four diameters.*



H.T.D del. J.N.Fitch Lith.

Vincent Brooks Day & Son Imp.

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Tab. 6448.

SALVIA elegans.

Native of Mexico.

Nat. Ord. Labiatæ.—Tribe Monardeæ.

Genus Salvia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1194.)

Salvia (Calosphace) *elegans;* erecta, gracilis, glabra v. parce pilosa, foliis petiolatis ovatis acutis serratis basi rotundatis v. acutis, supra hispidulis pubescentibus v. tomentosis, floralibus parvis sessilibus ovatis acuminatis deciduis, verticillastris remotis interdum distantibus sub 6 floris, floribus pollicaribus breviter pedicellatis glanduloso-villosis, calyce campanulato labio superiore 1–3–aristato, inferioris dentibus brevibus aristatis, corolla coccinea calyce sub sextuplo longiore, tubo subincurvo, labiis subæqualibus superiore galeato obtuso erecto inferioris lobo medio rotundato lateralibus parvis, genitalibus exsertis, connectivis linearibus rectis.

S. elegans, *Vahl, Enum.* vol. i. p. 238; *Benth. in D.C. Prodr.* vol. xii. p. 343; *Saunders, Refug. Bot.* t. 228.

S. incarnata, *Cav. in Ann. Cienc. Nat.* vol. ii. p. 112; *Kunth in Humb. and Bonpl. Nov. Gen. et Sp.* vol. ii. p. 293 and 144.

S. microculis (*irr. typ. pro* microcalyx), *Poir. Dict.* vol. vi. p. 614.

S. punicea, *Mart. et Gal. in Bull. Acad. Brux.* vol. v. p. 11.

Apparently a common and variable mountain plant of Mexico, as I find it amongst the collections of almost all the botanical travellers of that country, where it inhabits elevations of about 9000 feet. Seeing how vivid its colours are, it is singular that it should not earlier have been introduced into English gardens. The first person who appears to have cultivated it in this country is Mr. Wilson Saunders, at his fine garden at Reigate, now dispersed, to the great regret of all horticulturists. Our specimen was flowered in Sir George MacLeay's beautiful garden at Pendell Court, near Bletchingly. These gardens are now under the care of Mr. Green, who was formerly gardener to Mr. Wilson Saunders, with whom and with the late Mr. W. Borrer before him, at Henfield, in Sussex, he

acquired a knowledge of interesting cultivated plants that has rarely been equalled.

DESCR. A tall, graceful herb, two to four feet high, with slender four-angled stem, more or less hairy, pubescent, or nearly glabrous. *Leaves* one to four inches long, ovate, acute or acuminate, serrate, pubescent, pilose or tomentose, base rounded or acute; petiole one-third to one inch long, slender. Inflorescence of numerous verticillasters, which are more or less remote, sometimes an inch apart, and forming a spike a foot long, rachis very slender; floral leaves (or bracts) small, one-fourth of an inch long; ovate, acuminate, very deciduous. *Verticillasters* about six-flowered. *Flowers* suberect, upwards of an inch long, tomentose. *Calyx* short, five-angled, two-lipped, lips short, teeth triangular, with acute shortly aristate tips. *Corolla* scarlet, about six times as long as the calyx; tube slender, compressed; upper lip oblong, very concave, rounded at the tip, erect; lower reflexed, about as long as the upper mid-lobe rounded, retuse, lateral very small. *Stamens* exserted, connectives straight, slender, parallel; *anther-cells* broadly oblong.—*J. D. H.*

Fig. 1, flower; 2, section of corolla with stamens; 3, style arms:—*all enlarged.*



H.^r L del J.N.Fitch Lith

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Tab. 6449.

TRILLIUM NIVALE.

Native of the Northern United States.

Nat. Ord. Trilliaceæ.

Genus Trillium, *Linn.*; (*Kunth, Enum.* vol. v. p. 121.)

Trillium *nivale;* rhizomate oblongo obliquo tuberoso, pedunculo 3–4-pollicari, foliis tribus ovato-oblongis obtusis membranaceis 5-nervatis distincte petiolatis, pedicello brevi erecto vel cernuo, sepalis lanceolatis viridibus, petalis albis obovato-oblongis calyce sesquilongioribus, staminibus calyce brevioribus, antheris filamento lineari paulo brevioribus, stylis apice revolutis ovario longioribus.

T. nivale, *Riddell in Kunth Enum.* vol. v. p. 129 and 852; *A Gray Man.* edit. v. p. 523.

Of late years these Trilliums have been becoming more and more cultivated on rockeries in our English gardens. The finest species is *T. grandiflorum* of Salisbury, of which there is a good figure at Tab. 855 of the Botanical Magazine, under the name of *T. erythrocarpum*. The present species is one of the dwarfest of the genus, and is distinguished by its distinctly-petioled leaves and white petals without purple stripes. It inhabits woods in the North-western States from Ohio westward to Wisconsin. Our drawing was made from the plants that flowered in the herbaceous department at Kew this present summer.

Descr. *Rootstock* an oblique oblong tuber, with numerous wiry radical fibres. *Peduncle* without any leaves below the flower, three or four inches long, slender, terete, tinted with red-brown, with a membranous sheath at the base. *Leaves* always three in a whorl, oblong or ovate-oblong, obtuse, distinctly petioled, an inch and a half or two inches long, membranous, green and glabrous on both sides, with a distinct midrib running up from the base to the point, and two less distinct vertical nerves on each side of it. *Pedicel* about half an inch long, suberect or cernuous. *Sepals* green, lanceolate, membranous, obtuse or subobtuse,

under an inch long. *Petals* pure white, obovate or obovate-oblong, obtuse, half as long again as the calyx. *Stamens* shorter than the calyx; filaments linear; anthers linear-oblong, basifixed, rather shorter than the filaments. *Styles* free to the base, subulate, revolute at the stigmatose tip, longer than the globose ovary.—*J. G. Baker.*

Figs. 1 and 2, single stamens; fig. 3, pistil:—*both enlarged.*



H T D del J.N. Fitch Lith.

Vincent Brooks Day & Son Imp

Tab. 6450.

RHODODENDRON LEPIDOTUM *var.* OBOVATUM.

Native of the Sikkim Himalaya.

Nat. Ord. Ericeæ.—Tribe Rhodoreæ.

Genus Rhododendron, *L.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 599.)

Rhododendron *lepidotum, Wall. Cat. n.* 758; *Royle, Ill. Pl. Himal.* p. 260, t. 64, f. 1; *Hook. f. Sikkim Rhododendrons*, pt. ii. p. 6; *Bot. Mag.* t. 4657.

Var. obovatum; foliis obovatis utrinque squamulosis.

R. obovatum, *Hook. f. Sikkim Rhododendrons*, l. c. p. 6.

The plant here figured affords an instance of the variable characters which the Rhododendrons display in the centre of their geographical distribution, the Sikkim Himalaya. When first studying the species in their native mountains, it appeared to me easy to distinguish as two well-marked allied species, the present plant, described as *R. obovatum*, with dark-purple flowers and short leaves, and that I called *R. salignum* in the "Rhododendron of the Sikkim Himalaya" (t. 23) with lanceolate leaves and golden-yellow flowers. Further investigation led to the conclusion that neither the form and size of the leaf, nor the colour of the corolla, afforded any available diagnostic character; for though I never found *R. salignum* with purple flowers, I found plenty of *R. lepidotum* with golden-yellow ones. A third subject of variation is the number of stamens, which in almost all the wild specimens of *R. lepidotum* are eight, but in that here figured there are ten.

The name of *obovatum* was given to this form before it was ascertained to be conspecific with the *R. lepidotum* of Wallich, which is erroneously described in De Candolle's Prodromus from very imperfect specimens. As mentioned under Tab. 4657, *R. obovatum* is in no way specifically distinguishable from Wallich's Nepalese plant, and a reference to the above-cited plate will show that, except in the larger more maroon-coloured flowers, and more

copious glands on both surfaces of the leaf, this hardly differs from typical *R. lepidotum*.

R. lepidotum is a native of the loftier interior ranges of the Nepal and Sikkim Himalaya, at elevations of 8000 to 16,000 feet. The specimen figured was raised from seed sent to the Royal Gardens from Sikkim by Mr. Gammie, which flowered in May of the present year.

Descr. A stout or slender twiggy shrub, forming extended clumps, one to four feet high, branching from a woody tortuous rootstock; branches tufted, as thick as a crow's quill; whole plant covered with resinous scales. *Leaves* pale glaucous green, one-half to one and a half inch long, emitting a resinous odour, obovate in this form, elliptic or elliptic-lanceolate in others, not coriaceous. *Flowers* few, terminal, but subtended by leafing shoots; pedicels simple, one to two inches long. *Calyx* green, of five rounded oblong recurved obtuse or retuse sepals. *Corolla* maroon-purple in this variety, an inch in diameter, salver-shaped; tube very short, subglobose; limb spreading, lobes orbicular, veined. *Stamens* usually eight, rarely ten; filaments short, hairy at the base; anthers linear-oblong. *Ovary* ovoid, deeply five-lobed laterally; style very short, clavate, decurved; stigma discoid, obscurely five-lobed. *Capsule* hardly exceeding the calyx.—*J. D. H.*

Fig. 1, Pedicel, calyx, and pistil; 2 and 3, stamens:—*all enlarged.*

Tab. 6451.

ALLIUM karataviense.

Native of Turkestan.

Nat. Ord. Liliaceæ.—Tribe Allieæ.

Genus Allium, *Linn.*; (*Regel Monogr. in Act. Hort. Petrop.* vol. iii.)

Allium *karataviense;* bulbo magno solitario depresso-globoso, foliis 2 raro 3 prope scapi basin aggregatis magnis oblongis acutis viridibus glauco tinctis, scapo valido tereti semipedali, umbellâ magna globosa densiflora, spathæ valvis 2–3 parvis deltoideis, pedicellis strictis perianthio subtriplo longioribus, perianthii segmentis lanceolatis acuminatis albidis purpureo costatis, filamentis erectis perianthio æquilongis basi deltoideis coalitis, ovario globoso trilobato, ovulis in loculo geminis collateralibus erectis, stylo ovario æquilongo.

A. karataviense, *Regel Mon.* p. 243; *Fl. Turkest.* vol. i. p. 98, tab. xvi. figs. 1—3; *Gartenflora,* vol. xxvii. (1878), p. 162, tab. 941.

This again, like *Tulipa triphylla*, is one of the recent discoveries of the Russian explorers in Central Asia. It was first found several years ago by Sewerzow and Krause in the Karatau Mountains, east of Samarcand, and was gathered again in the summer of 1876 on the Alatau range by Dr. Albert Regel, who sent bulbs to his father at St. Petersburg, from whom we received it. Of old familiar types in the genus it most resembles *Allium nigrum*, but it is much dwarfer, with large prominently-veined leaves of firmer texture, and smaller flowers, with very acuminate perianth-segments. It is quite hardy in England, and our drawing was made from a specimen that flowered in the herbaceous ground at Kew in the month of May of this present year.

Descr. *Bulb* solitary, depresso-globose, a couple of inches in diameter. *Leaves* usually two, rarely three, crowded near the base of the stem, oblong, acute, suberect, firm in texture, distinctly veined, glabrous, dull green, with a slight glaucous tinge, six or nine inches long by about three inches broad at the middle. *Stem* half a

foot long, stout, terete, rather glaucous. *Umbel* very dense, globose, three or four inches in diameter; spathe-valves two or three, deltoid, membranous, shorter than the pedicels, which spread stiffly in all directions, and are about an inch in length. *Perianth* a third of an inch long; segments uniform, lanceolate, acuminate, nearly white, with a distinct purplish keel, rather ascending when fully expanded. *Filaments* about as long as the perianth-segments, subulate, deltoid and confluent at the base, permanently erect; anthers small, oblong, versatile. *Ovary* grey-purple, globose, deeply three-lobed; ovules two in each cell, erect, collateral; style as long as the ovary.—*J. G. Baker.*

Fig. 1, an expanded flower; fig. 2, a single stamen:—*both enlarged.*

A.B. del. J.N. Fitch Lith

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Tab. 6452.

GERANIUM atlanticum.

Native of Algeria.

Nat. Ord. Geraniaceæ.—Tribe Geranieæ.

Genus Geranium, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 272.)

Geranium *atlanticum*; pilis appressis subsericeum, eglandulosum, rhizomate crasso subgloboso, caule gracili suberecto, foliis omnibus longe petiolatis palmato-5–7-partitis, segmentis anguste obovatis v. cuneatis 3-fidis laciniatis v. pinnatifidis laciniis grosse dentatis, floribus subterminalibus 1½ poll. diam., pedunculis 2-floris post anthesin erectis, sepalis ellipticis subaristatis appresse hirsutis, petalis obcordatis purpureis sepalis multo longioribus, filamentis basi pilosis, carpellis maturis lævibus rostroque brevissime pilosis eglandulosis, seminibus subtilissime punctulatis.

G. atlanticum, *Boiss. Diagn. Pl. Orient. Nov.* vol. i. p. 59; *Walp. Rep.* vol. ii. p. 819.

Though differing from Boissier's character in the colour of the petals, which that author describes as rosy, and their length, which he states to be only twice that of the sepals, this so well agrees not only with the rest of his good description, but with native specimens in Munby's Herbarium and others collected by Lefebvre, and communicated by Prof. Reichenbach, that I have no doubt of the correctness of the identification. As a species it is, as Boissier points out, near the widely-diffused *G. sylvaticum*, but differs in being wholly eglandular, with more deeply-divided and silky leaves, as also in the woody tuberous rootstock; though the latter may well be a climatal character.

G. atlanticum is a native of Algiers, where it is found in rocky places, near Constantine by Boissier, on the banks of the Chiffa by Munby, on the peak of Mérid by Choulette, and in oak forests near Blidah by Lefebvre. The specimen here figured flowered in June 1878 and 1879 in the garden of the artist, Mrs. Barnard, on Leckhampton Hill near Cheltenham, from a root brought by Mrs. Thiselton Dyer in 1875 from Algeria.

Descr. A perennial herb, clothed with rather appressed

silky hairs, eglandular; rootstock a small woody tuber with dark-brown bark. *Stems* one or more from the rootstock, suberect, twelve to eighteen inches high, slender, simple, flexuous. *Leaves* all long-petioled, radical petioles four to five inches long; uppermost floral only sessile; all orbicular, cut nearly to the base into five or seven narrowly obovate or cuneate segments, which are again trifid or pinnatifidly laciniate and toothed, the teeth acute or obtuse, silky on both surfaces, but especially beneath; stipules small, linear-oblong. *Flowers* one and a half inch in diameter, in terminal 2-flowered peduncles, which, as well as the pedicels and calyx, are silky; peduncles and pedicels each about an inch long; bracts small, subulate-lanceolate. *Sepals* elliptic, acuminate, with a short awn. *Petals* three or four times as long as the sepals, obcordate, pale purple, with red veins; claw small, hairy. *Filaments* glabrous, except at the base. *Carpels* smooth, minutely pubescent, eglandular. *Seeds* most minutely dotted.—*J. D. H.*

Fig. 1, Longitudinal section of flower; 2, claw of petal; 3, stamen; 4, pistil; 5, rootstock and radical leaves:—figs. 3 and 4 *enlarged*.

















A B del. J N Fitch Lith.

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TAB. 6453.

CHIONODOXA NANA.

Native of Crete.

Nat. Ord. LILIACEÆ.—Tribe HYACINTHEÆ.

Genus CHIONODOXA, *Boiss.*; (*Baker in Journ. Linn. Soc.* vol. xi. p. 435.)

CHIONODOXA *nana*; bulbo minimo ovoideo tunicis membranaceis exterioribus brunneis, foliis 2 linearibus suberectis viridibus facie canaliculatis apice cucullatis, scapo gracili tereti foliis breviori, floribus 1–4 laxe corymbosis, pedicellis ascendentibus, bracteis obsoletis, perianthii albo-cœrulei 5–6 lin. longi tubo campanulato, segmentis oblongis patulis tubo 2–3-plo brevioribus, staminibus segmentis subtriplo brevioribus, antheris breviter protrusis, ovario globoso, stylo brevissimo.

C. nana, *Boiss. & Held. in Boiss. Diagn.* I. part xiii. p. 24; *Baker in Journ. Linn. Soc. loc. cit.*

Hyacinthus nanus, *Roem. et Schultes Syst. Veg.* vol. vii. p. 581; *Kunth Enum.* vol. iv. p. 304.

Puschkinia scilloides, *Sieber Reise Crete*, vol. ii. p. 319, tab. 7, *non Adams.*

This, the oldest-known species of Chionodoxa, is a native of the mountains of Crete, at an altitude of five thousand or six thousand feet above sea-level, flowering in the neighbourhood of the melting snow in May, and consequently perfectly hardy in our English gardens. It was discovered by Sieber, an Austrian traveller who collected plants largely in the island about the year 1820, and who confounded it with the Caucasian *Puschkinia scilloides*, and figured it under that name in his published travels. For horticultural purposes it is far inferior to *C. Luciliæ* (Bot. Mag. tab. 6433), the flower being much smaller, and the whole habit of the plant more slender. Our drawing was made from plants that flowered in the herbaceous ground at Kew in May of the present year, which were raised from bulbs that were sent to us by Mr. Elwes.

DESCR. *Bulb* ovoid, under half an inch in diameter, the tunics very thin and membranous, the outer brown, the

inner whitish. *Leaves* two to a scape, contemporary with the flowers, suberect, linear, five or six inches long, under half an inch broad, green, deeply channelled down the face and hooded at the tip, tinted with purple towards the base. *Scape* very slender, terete, three or four inches long, bearing from one to four laxly corymbose flowers; pedicels ascending, reaching an inch or an inch and a half in length; bracts obsolete. *Perianth* five or six lines long; tube campanulate; segments oblong, two or three times as long as the tube, spreading when the flower is fully expanded, white, keeled and flushed with lilac-blue. *Stamens* a third as long as the perianth-segments; filaments strap-shaped, inserted at the throat of the perianth-tube, nearly equal, touching edge to edge permanently, but not united; anthers linear-oblong, rather overtopping the filaments. *Ovary* globose, bright blue; style very short; stigma capitate, reaching only to the base of the anthers and the throat of the perianth-tube.—*J. G. Baker.*

Fig. 1, vertical section of a flower; 2, side view of a stamen; 3, back view of the same; 4, front view of the same; 5, perianth-tube, with the six stamens inserted at its throat; 6, horizontal section of ovary, *all enlarged;* 8 and 9, two forms of bulb and radical fibres, *life-size.*



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Tab. 6454.

PSYCHOTRIA JASMINIFLORA.

Native of South Brazil.

Nat. Ord. Rubiaceæ.—Tribe Psychotrieæ.

Genus Psychotria, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 123.)

Psychotria (Eupsychotria) *jasminiflora;* fruticosa, ramulis teretibus, foliis breviter petiolatis oblongis acutis basi rotundatis v. subcordatis coriaceis, stipulis parvis in vaginam intrapetiolarem connatis setosis persistentibus, pedunculis terminalibus et axillaribus, cymis paucifloris breviter paniculatis, calycis glabri limbo tubuloso inæqualiter breviter 4-lobo, corollæ villosæ tubo gracili elongato, fauce paullo ampliata, lobis 4-oblongis obtusis, filamentis glabris, antheris exsertis.

Gloneria jasminiflora, *Lind. & André, Ill. Hortic.* vol. xviii. p. 76, t. 60; *Benth. et Hook. f. Gen. Pl.* vol. ii. p. 51, et. 1228.

The genus *Gloneria*, which was founded upon this plant, must have originated in some curious misconception, the æstivation of the corolla being described as contorted, the ovules as numerous, inserted on fleshy placentas in each cell, and the leaves as tomentose beneath. When describing the genus for the "Genera Plantarum," I had access to no specimens, and gave the description under the authority of its founders, applying, however, to my friend Mr. Linden for some flowers from his rich garden. The plants, however, were not then in flower, but he subsequently obligingly gave me some, which enabled me to refer the genus *Gloneria* to *Psychotria*, as stated in the "Addenda and Corrigenda" to the same volume of the "Genera Plantarum."

Though undoubtedly a *Psychotria*, this species is very different from any other of that immense genus, and so closely resembles in habit, form of corollas, texture of the leaves, and other characters, a *Coussarea*, that but for the two cells of the ovary with thick dissepiments between them, I should have been disposed to refer it to that genus. Indeed, I think that this plant renders it questionable

whether *Coussarea* and *Faramea* (which has a very thin dissepiment) should not be included under *Psychotria*. The stipules of *P. jasminiflora* are quite those of the latter genus, being united into an intrapetiolar tube, and bearing simple or branched bristles on the back or margin, which are sometimes caducous.

P. jasminiflora was discovered by Libon in the province of St. Catherine, in South Brazil, in 1860, and introduced by Mr. Linden; and the specimen here figured was flowered in Messrs. Williams's Nursery in May of the present year.

Descr. A nearly glabrous shrub, except the corolla, with white bark. *Leaves* shortly petioled, three inches long and under, oblong-ovate, acute, coriaceous, evergreen, bright green above, pale beneath with obscure nerves; base acute or cordate; petiole an eighth of an inch long. *Stipules* united into a short intrapetiolar sheath, with several rigid bristles from their back or margins, which are often branched and deciduous. *Inflorescence* of trichotomous cymes shorter than the leaves; peduncle flattened, terminal, rarely axillary, glabrous; partial ones almost obcuneate; pedicels 3-nate, short, flattened; bracteoles appressed to the calyx, short, toothed. *Calyx-tube* short, limb dilated, cupular, obtusely unequally 4-toothed or lobed. *Corolla* snow-white, one to one and a quarter inch long, externally softly villous or tomentose; tube slender, slightly dilated above the middle; lobes one-fourth the length of the tube, oblong, obtuse, valvate. *Stamens* inserted half-way down the tube, filaments slender glabrous, exserted; anthers small, broadly oblong. *Disk* annular, erect. *Style* slender, stigmatic arms subulate, hairy. *Ovary* 2-celled, with a thick septum; ovules solitary in each cell, basal, erect, oblong.—*J. D. H.*

Fig. 1, Flower; 2, upper portion of corolla laid open, and stamens; 3, lower part of corolla and ovary cut longitudinally; 4 and 5, anthers; 6, tip of style and stigmas:—*all enlarged.*











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Tab. 6455.

ODONTOGLOSSUM MACULATUM.

Native of Mexico.

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Odontoglossum, *H. B. & K.*; (*Lindl., Fol. Orchid. Odontoglossum.*)

Odontoglossum (Xanthoglossum) *maculatum*; pseudo-bulbis oblongo-ovatis compressis 1-phyllis, foliis oblongo-lanceolatis acutis nervosis, racemis pendulis multi-laxi-floris folio longioribus, bracteis spathaceis ovario brevioribus, sepalis rectis anguste lineari- v. lanceolato-oblongis acuminatis brunneis, apicibus recurvis, petalis ovato-lanceolatis acuminatis aureis brunneo maculatis, marginibus undulatis, labelli lamina late trulliforme v. triangulari caudato-acuminata aurea brunneo maculata, marginibus crispatis, ungue brevi 2-cristata, columna alba.

O. maculatum, *Llave, Orchid. Mex.* vol. ii. p. 35; *Lindl. in Bot. Reg.* vol. xxvi. t. 30; *Fol. Orchid. Odontogloss.* p. 5; *Regel Gartenfl.* (1877), vol. xxvi. p. 258, t. 913; *Walp. Ann.* vol. vi. p. 829; *Reichb. f. Pescatorea*, t. 28; *non Tab. nostr.* 4878, *quæ O. cordatum, Lindl.*

So long ago as 1855 a plant was figured in this work as *Odontoglossum maculatum*, which, however, differs widely from that species in the size of the flower and in the form and colouring of the sepals, petals, and lip, and which is the *O. cordatum* of Lindley. Both these species are natives of Mexico, and belong to the same section of the genus, of which twelve species are known, including some of the finest, which are yet to be introduced into cultivation.

O. maculatum has been long cultivated at Kew, and flowers freely in June.

Descr. *Pseudobulbs* one and a half to two and a half inches long, broadly oblong-ovate, compressed, dark-green, smooth, one-leaved. *Leaves* six to eight inches long, oblong-lanceolate, acute, about 9-nerved, bright pale-green. *Racemes* a foot long and more, pendulous, loosely many-flowered; peduncle rather stout; rachis flexuous; bracts spathaceous, shorter than the ovary. *Flowers* about an inch apart, nearly three inches across the petals. *Ovary* with

pedicel two inches long. *Sepals* spreading, nearly straight, narrowly linear, oblong-lanceolate, brown, with slender acuminate yellow recurved tips, not spotted. *Petals* rather shorter than the sepals, ovate-lanceolate, finely acuminate, the base contracted, undulate, golden yellow with brown blotches below the middle. *Lip* with the blade trowel-shaped or triangular, about as long as the petals, acuminate, the margins crisped, base truncate; claw about half as long as the blade, with a lobed erect crest on each side. *Column* white, not winged or cirrhose.—*J. D. H.*

Fig. 1, column and lip; 2, front view of column; 3, anther-case; 4 and 5, back and side views of pollen-masses and their gland:—*all enlarged.*



A B del. J N Fitch Lith

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TAB. 6456.

VERONICA LYALLII.

Native of New Zealand.

Nat. Ord. SCROPHULARINEÆ.—Tribe DIGITALEÆ.

Genus VERONICA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 964.)

VERONICA (Chamædrys) *Lyallii*; glabra v. parce puberula, caulibus gracilibus erectis v. repentibus rigidulis, foliis parvis breviter petiolatis ovatis acutis serratis coriaceis, pedunculis axillaribus erectis elongatis gracilibus glabris pauci- v. multifloris, floribus racemosis, racemis continuis v. interruptis, bracteis sessilibus ovatis obovatis oblongisve, pedicellis gracilibus elongatis, sepalis oblongo-ovatis acutis, corolla rotata, lobis omnibus orbiculatis 2 lateralibus postico paullo majoribus, antico minore integro, staminibus brevibus, capsula didyma sepala æquantibus v. superantibus, lobis turgidis.

V. Lyallii, *Hook. f. Fl. Nov. Zeald.* vol. i. p. 196; *Handb. of New Zeald. Fl.* p. 215.

A singularly elegant plant, and one which, considering its wide range in New Zealand, might have been expected to have been introduced long before this. I believe it to be a form of the very variable *V. Lyallii*, which approaches closely to *V. cataractæ*, *V. Bidwillii*, and *V. nivalis*, if, indeed, some of these species are really specifically distinct. Most of our native specimens have the stems creeping, as in our *V. Chamædrys*, but a few have them more woody and suberect, as in the plant here figured. It inhabits both the larger islands of New Zealand, at elevations of 2000 feet and upwards; and we have specimens which cannot be distinguished specifically in a dry state, gathered by Colenso on rocky cliffs at Patea, and from the top of the Ruahine mountains. From its near ally, *V. nivea* (erroneously called *nivalis* in the Handbook of the New Zealand Flora), it differs in the eglandular inflorescence, slender peduncle, and 2-lobed anterior corolla-lobe, from *V. catavactæ* in its much smaller leaves. It is curious that amongst no fewer than twenty-eight ticketed specimens from various collectors, not one of the latter has recorded on the ticket the colour

of the flower! That of *V. nivea* I know to be white with pink veins, and others of this section have pale violet-blue or pinkish flowers; probably this character is a variable one. The indigenous specimens which accord most nearly with our figure in their erect woody habit, were gathered by Dr. Lyall, R.N. (after whom the species was named), at Milford Sound, when exploring the New Zealand islands as surgeon and naturalist attached to H.M.S. Acheron, which was surveying the coast.

V. Lyallii was raised from seed by my indefatigable friend, Mr. Isaac Anderson Henry, F.S.A., and flowered with him in May of the present year for the first time.

DESCR. A slender suberect or creeping branching plant, glabrous or with the stem pubescent; branches rather woody, prostrate and rooting or ascending. *Leaves* small, one-half to two-thirds of an inch long, shortly petioled, coriaceous, usually ovate and acute, coarsely serrate. *Peduncles* solitary, or in pairs in opposite axils (one in each), very slender, erect, three to five inches long. *Racemes* glabrous, few or many flowered, continuous or interrupted; pedicels very slender, one-half to one inch long; bracts variable, small, green, coriaceous, ovate-oblong or obovate. *Flowers* one-third to one-half an inch in diameter. *Sepals* ovate-oblong, acute. *Corolla* rotate, white, with the veins pink near the throat; lobes orbicular, the lateral largest, the anterior smallest. *Stamens* shorter than the corolla-lobes, filaments slender, glabrous; anthers pale purplish. *Ovary* glabrous, oblong, compressed. *Capsule* didymous, valves turgid, about equalling the sepals.—*J. D. H.*

Fig. 1, flower viewed in front; 2, calyx, pedicel, and style; 3, stamen; 4, pistil:—*all enlarged.*



J N Fitch, Lith.

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TAB. 6457.

ARISÆMA GALEATUM.

Native of the Sikkim Himalaya.

Nat. Ord. AROIDEÆ.—Tribe ARISAREÆ.

Genus ARISARUM, *Mart.*; (*Schott, Prodr. Syst. Aroid.* p. 24.)

ARISÆMA (Trisecta) *galeatum;* dioicum, folio solitario 3-foliolato, foliolis breviter petiolulatis decurvis ovatis acuminatis basi acutis v. rotundatis marginibus crenulatis rubris reticulatim nervosis, nervis supra impressis subtus prominentibus rubris, petiolo tereti cylindraceo viridi, pedunculo petiolo multo breviore viridi, spatha 4-pollicari, tubo subelongato cylindraceo leviter curvo 1 poll. diam. viridi ad 10-costato costis pallidis, vertice decurvo galeato lævi in laminam brevem pendulam ovato-oblongam marginibus recurvis abrupte desinente, spadicis masculi parte florifero brevi rubro, antheris sparsis, appendice a basi truncato elongato-conico in filum longissimum sensim desinente.

A. galeatum, *N. Brown in Gard. Chron.*, 1879, p. 102.

This is not the least remarkable species of that curious genus, to the numerous unfigured species of which now in cultivation I have called attention under Tab. 6446; though it falls far short, in stature, colour, and singularity of spathe, of the *A. utile* and *Hookerianum*, which have yet to be figured. In many respects it resembles *A. nepenthoides*, but differs remarkably in the long cylindrical tube of the spathe, in wanting the large auricles at its mouth, and in the curious boss or hood that crowns the tube. Like so many of its congeners, it is a native of Sikkim, from whence tubers were sent to Kew by our indefatigable correspondent, Mr. Garmmie, through Dr. King, of the Calcutta Botanic Gardens. It flowered in Kew in May of the present year, as it also did in the gardens of the Royal Horticultural Society, Chiswick, from which plant the drawing here published was made.

DESCR. *Leaf* solitary; petiole two feet high, cylindric, smooth, green, unspotted; leaflets three, decurved, shortly stoutly petiolulate, ovate, acuminate, ten inches long, the

lateral five, the central six and a quarter inches broad; margins crenulate, red, upper surface with close set impressed veins, which are prominent and reddish beneath, bright pale-green. *Peduncle* not one quarter as long as the petiole, stout, erect, dull green, without markings. *Spathe* four inches long, erect, cylindric for the most part of its length, one inch in diameter, and very slightly curved, rather dirty-green, with about twenty pale almost white ridges faintly tinged with pink; top of spathe suddenly decurved, and ending in pendent green ovate acute lamina, that is given off below a rounded boss-like crown, upon which the ridges terminate; margins of the lamina produced along the mouth of spathe as two narrow recurved lips. *Spadix*, male only seen, with a very short reddish flowering portion, loosely covered with small stipitate anthers; appendix almost white, sessile on the flowering portion by its truncate base, elongate conical, gradually narrowed into a filiform tail ten inches long, the end of which rests on the ground.—*J. D. H.*

Fig. 1, much reduced figure of whole plant; 2, leaf reduced about one-half; 3, spathe, and 4, spadix of the natural size; 5, anther before dehiscence; 6, the same after the pollen is shot:—*both enlarged.*



3

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Tab. 6458.

BOLLEA cœlestis.

Native of New Grenada?

Nat. Ord. Orchideæ.—Tribe Vandeæ.

Genus Bollea, *Reichb. f. in Mohl and Schlecht., Bot. Zeit.* 1852, *p.* 667.

Bollea *cœlestis;* foliorum vagina 3–4-pollicari 1 poll. lata compressa, lamina 6-pollicari 2 poll. lata oblongo-lanceolata acuta, pedunculis 4–5 pollicaribus robustis flexuosis, floribus 4 poll. diam., sepalis acutis violaceis ultra medium saturatioribus, marginibus undulatis versus apice flavis, postico obovato, lateralibus majoribus late oblongis, petalis sepalo postico consimilibus, labello a basi profunde cordato ovato saturate violaceo basin versus flavo marginibus recurvis, apice attenuato revoluto, callo in disco elevato tabulæformi antice rotundato multisulcato aureo columna angustiore, columna crassa fornicata antice pilosa.

B. cœlestis, *Reichb. f. in Gard. Chron.* 1876, p. 756, *and* 1877, p. 366, *et in Linnæa*, vol. xli. p. 5.

The rarity of blue or violet-coloured Orchids has given a notoriety to this remarkable plant, which is the largest of the genus to which it belongs, and from the size and colouring of the flower by far the most showy. It would also appear to be a very free flowerer, as Mr. Backhouse of York, to whom I am indebted for sending the fine specimen here figured, informs me that four and even six flowers occur on one shoot, and that twelve had been seen on one of his plants with three shoots. Unfortunately even a quarto plate would not give room to represent such a specimen.

Under *B. Lalindei* (t. 6331) I have expressed concurrence in the opinion that *Bollea* should, along with *Pescatorea*, be reduced to *Zygopetalum;* and I am glad to see that M. Reichenbach adheres to this view, for under the description of the present plant he says, "Botanice *Zygopetalum cœleste.*"

As to the native country of this plant, Prof. Reichenbach says, "It was discovered somewhere in western tropical South America, by M. Roezl, or by the Messrs. Klabock, his

nephews." As stated above, I am indebted to Mr. Backhouse for the specimen figured, which was sent up in June last. For its cultivation he recommends a strong light, but with slight shade in intense sunshine, a humid atmosphere, free watering with water of about the temperature of the house, but never below it, and a temperature of 60° to 70° in summer, and 55° to 60° in winter.

DESCR. *Leaves* six to ten on a shoot; sheath flattened, pale, three to four inches long by one broad; blade six inches long by two broad, oblong-lanceolate, acuminate, bright pale-green. *Peduncles* one from each leaf, one-flowered, six inches long, very stout, erect, flexuous. *Flowers* four inches in diameter. *Sepals* broad, acute, violet-purple, with a broad much deeper band beyond the middle and undulate edges, yellow towards the tips, all acute; dorsal smaller, obovate, hooded; lateral larger, more oblong. *Petals* like the dorsal sepal, and about the same size, but paler coloured. *Lip* with a short claw and ovate limb which is deeply cordate at the base, its margins are recurved, and tip produced and revolute; it is deep violet beyond the middle, paler with yellowish margins towards the base; disk golden-yellow, much raised, tabular and rounded in front, deeply grooved as if formed of about twenty thick parallel raised connate plates with rounded tips. *Column* very large, arching over the disk, violet, obtuse, hairy in front within.—*J. D. H.*

Fig. 1, column and lip; 2, lip; 3, top of column viewed in front:—*all enlarged.*



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M.S. del. J.N. Fitch, Lith.

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Tab. 6459.

TULIPA triphylla.

Native of Turkestan.

Nat. Ord. Liliaceæ.—Tribe Tulipeæ.

Genus Tulipa, *Linn.*; (*Baker in Journ. Linn. Soc.* vol. xiv. p. 275.)

Tulipa *triphylla*; bulbo ovoideo-oblongo tunicis brunneis membranaceis intus apice parce adpresse pilosis, foliis 3–4 prope caulis basin impositis linearibus vel lanceolatis glauco-viridibus falcatis facie glabris margine obscure ciliatis, pedunculo semipedali glabro erecto, perianthii lutei infundibularis 15–18 lin. longi segmentis subconformibus oblongis subacutis, staminibus perianthio triplo brevioribus, antheris filamento clavato glabro æquilongis, ovario clavato-trigono stigmatibus parvis.

T. triphylla, *Regel Gartenflora*, vol. xxvii. (1878), p. 193, tab. 942, figs. b, c, d.

This is another new species of Tulip from Central Asia. It was discovered by Dr. Albert Regel, on a recent excursion to the Sairam See, in latitude 42°, just south of the centre of the great Thian-schan range. At first sight its affinity appears to be with *T. sylvestris*, but on looking closer it is found to have the glabrous filaments and other marks of the *Gesneriana* group, in which it is easily recognized by its narrow leaves, crowded together near the base of the stem, and funnel-shaped yellow flowers with uniform subacute segments. The drawing was made from plants that flowered at Kew this present spring, which were raised from bulbs sent to us by Dr. Regel, the father of its discoverer.

Descr. *Bulb* ovoid-oblong, middle-sized, the dark brown membranous tunics with only a few adpressed hairs on the inside towards the tip. *Stem* six or eight inches long, one-flowered, bearing near its base three or four crowded falcate linear or lanceolate *leaves*, which are three or four inches long, a quarter or half an inch broad, slightly glaucous, glabrous on both faces, obscurely ciliated on the margins.

November 1st, 1879.

Peduncle half a foot long, slender, erect, glabrous. *Perianth* funnel-shaped, bright yellow, tinted with green on the outside; segments nearly uniform, oblong, subacute, an inch and a quarter or an inch and a half long, half or three-quarters of an inch broad at the middle. *Stamens* one-third as long as the perianth; anthers linear-oblong, equalling in length the clavate glabrous filaments. *Ovary* clavate-trigonous, shorter than the stamens; stigmas small.—*J. G. Baker.*

Fig. 1, a couple of stamens; 2, pistil:—*both enlarged.*



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M. Smeeton J.N. Fitch Lith.

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TAB. 6460.

ENKIANTHUS HIMALAICUS.

Native of the Eastern Himalaya.

Nat. Ord. ERICEÆ.—Tribe ANDROMEDEÆ.

Genus ENKIANTHUS, *Lour.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 588.)

ENKIANTHUS *himalaicus*; frutex v. arbuscula, foliis ad apices ramulorum fasciculatis deciduis membranaceis petiolatis, petiolis pedunculisque pilosis, ovatis acuminatis serrulatis pubescentibus demum glabratis, floribus umbellatim congestis pendulis, pedunculis elongatis 1-rarius 2-floris, corolla urceolato-campanulata basi æquali, antheris 2-aristatis, capsulis decurvis pentagonis loculicidis valvarum marginibus incrassatis, seminibus lineari-oblongis, testa 5-alata, alis membranaceis undulatis.

E. himalaicus, *Hook. f. et Thoms. in Kew Journ. Bot.* vol. vii. p. 125, t. 3.

Rhodoraceæ, *Griff. Posth. Papers*, vol. ii. p. 148, n. 717, *and* Rhodora deflexa, *Griff. l. c.* p. 187, n. 969.

The eastern Asiatic genus *Enkianthus* presents four types of structure which almost indicate as many genera, and would do so if the species had not been united by habit, and if the characters were associated, instead of applying each to one species only. The original *E. quinqueflorus* of China (tab. nost. 1649) has subumbellate drooping flowers, as in our plant, but the corolla has five swellings at the base, and the capsules are erect. *E. japonicus* (tab. 5822), the second type, has also subumbellate but spreading flowers, and the corolla has a contracted mouth and five much larger swellings at the base, but the capsules are quite erect; and, lastly, there is a third, also a Japanese type (*E. Meisteria* of Siebold and Zuccarini), with racemose flowers, and the deflexed capsules and corolla of the *E. himalaicus*, but with the lobes of the latter laciniate: this last has not yet been introduced into cultivation.

Enkianthus himalaicus was discovered by the late Dr. Griffith in Bhotan, at an elevation of 8000 to 10,000 feet above the sea, a fact not known to me when I published the species as a discovery of my own, the Griffithian collec-

tion being at that time inaccessible in the vaults of the India House. In Sikkim it inhabits the same elevation as in Bhotan, and becomes a small tree twenty feet high.

The specimen here figured is from a plant raised in the Royal Botanic Gardens of Edinburgh, where it has flowered under Mr. Sadler's care, and was communicated by Dr. Balfour in June of the present year. The colour of the flower is much brighter in the native Sikkim specimens than in that here represented.

Descr. A large shrub or small tree, with deciduous leaves that are crowded towards the ends of the branches, and whorls of drooping flowers. *Branches* slender, stiff, with red-brown bark, young ones bright red, as are the petioles, midribs, and margins of the leaves. *Leaves* two to three inches long, petioled, ovate-lanceolate, acuminate, serrulate, base acute, pubescent beneath when young; petiole slender, hairy. *Flowers* crowded in an umbellate manner towards the tips of the branches and bases of the young shoots, pendulous, pedicels hairy, one and a half inches long, rarely two-flowered. *Calyx-lobes* small, subulate-lanceolate, appressed. *Corolla* half an inch long, broadly campanulate, obscurely five-angled, five-lobed; lobes short, triangular, red, scarcely spreading; limb dull yellowish red, streaked with brighter red. *Stamens* included, pubescent all over, filaments short; anther-horns recurved. *Ovary* pubescent. *Capsule* decurved on the pedicel, almost globose, with five valves that are thickened at the edges. *Seeds* with five membranous wrinkled toothed wings.—*J. D. H.*

Fig. 1, stamens; 2, calyx and ovary; 3, vertical section of ovary; 4, peduncle and capsule; 5, seed; 6, longitudinal section of ditto:—*all but fig.* 4 *enlarged.*

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Tab. 6461.

SOLANUM Torreyi.

Native of Texas and Arkansas.

Nat. Ord. Solanaceæ.—Tribe Solaneæ.

Genus Solanum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 888.)

Solanum *Torreyi*; suffruticosum, cinerascens, stellato-purpuraceum, aculeis parvis rectis nunc raris v. obsoletis, foliis breviter petiolatis ovatis ovato-cordatis v. hastatissinuato-lobatis, lobis integris v. undulatis obtusis inermibus, cymis primum terminalibus 2–3-fidis pedunculis pedicellisque robustis, floribus mutantibus, calycis lobis triangulari-ovatis, corolla 2 poll. diam., lobis late ovatis acutis violaceis plicatis, antheris subæqualibus lanceolato-subulatis poro parvo, baccis globosis glabris, pedunculis reflexis.

S. Torreyi, *Gray in Proc. Amer. Acad. Sc.* vol. vi. p. 44; *Synopt. Fl. N. Am.* vol. ii. part 1, p. 230.

S. platyphyllum, *Torr. in Amer. Lyc. New York*, vol. ii. p. 227, *not. H. B. K.*

S. mammosum ? *Engelm. et Gray, Pl. Lindh.* vol. i. p. 46.

A very handsome and free-flowering hardy *Solanum*, a native of the prairies of the interior of North America, east of the Rocky Mountains, where this and other species of the genus form a frequent feature in the uniform landscape. It varies very much in amount of prickliness, depending a good deal on the dryness of the locality and consequent luxuriance or poverty of the plant. The young leaf-buds are often a bright red-purple colour and velvety texture, and the older leaves, even in a young state, are often tinged with pale rose-red underneath. The flowers are large, produced copiously, and beautifully veined with red-purple. The plant was raised from seed sent from the Cambridge (U.S.) Botanic Gardens in 1877, and it flowered in July, 1878, in the open border of the herbaceous ground at Kew. It has survived the long cold winter of 1878–9.

Descr. An erect stout herb, with the stem woody below, and a running rootstock, covered with a close-set purpuraceous pubescence of stellate hairs, and more or less prickly;

prickles small, straight, most frequent on the midrib of the leaf beneath, and rare on the stem or absent from it. *Leaves* two to three inches long, ovate with a rounded cordate truncate or hastate base, sinuately lobed, the lobes obtuse usually rounded, mealy especially beneath; petiole short, stout. *Flowers* in terminal few-flowered cymes, two inches in diameter, nodding; peduncles and pedicels short and stout. *Calyx-lobes* broadly ovate, subacute or obtuse, pale blue. *Corolla-lobes* horizontally spreading, triangular ovate, acute, plaited, with wrinkled margins and a stout midrib which is yellowish towards the base; veins purplish. *Stamens* subequal, filaments very short; anthers lanceolate, opening by a small terminal pore, yellow. *Berry* globose, glabrous, smooth.—*J. D. H.*

Fig. 1, stamen; 2, calyx cut open, showing the ovary and style; 3, vertical section of young fruit:—*all enlarged.*



A.B del J.N Fitch Lith

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TAB. 6462.

COREOPSIS ARISTOSA.

Native of the United States.

Nat. Ord. COMPOSITÆ.—Tribe HELIANTHOIDEÆ.

Genus COREOPSIS, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 385.)

COREOPSIS *aristosa*; annua, erecta, glaberrima v. hic illic puberula, foliis oppositis 1–2-pinnatisectis, segmentis 5–7 distinctis lanceolatis grosse serratis acuminatis basin versus attenuatis et integerrimis, capitulis flavis paniculatim corymbosis, involucri bracteis exterioribus numerosis foliaceis linearibus patentibus tortis, floribus radii ad 8 limbo elliptico-lanceolato acuto, acheniis late oblongis marginatis hispidulis 2–4-aristatis.

C. aristosa, *Michx. Fl. N. Am.* vol. ii. p. 140; *DC. Prodr.* vol. v. p. 572; *Torr. et Gr. Fl. N. Am.* vol. ii. p. 340.

C. aristata, *Willd. Sp. Pl.* vol. iii. p. 2253.

Diodonta aristosa, *Nutt. in Trans. Amer. Phil. Soc.* (n. ser.) vol. vii. p. 360.

This is one of the many golden-flowered plants of the Eastern United States, which are the glory of the autumnal herbaceous vegetation of that country, and are much needed for the decoration of our borders and beds, late in the season especially. It is indeed astonishing that these Coreopsises, with the Asters, Helianthi, Rudbeckkias, Silphiums, and numberless other fine North American herbaceous plants, all so easily grown and so handsome, should be entirely neglected in English gardens; and this in favour of carpets, hearth-rugs, and ribbons, forming patterns of violent colours, which though admired, from being the fashion, on the lawn and borders of our gardens and grounds, would not be tolerated on the floor of a drawing-room or boudoir.

Coreopsis aristosa has a wide range in the United States, from Michigan, one of the most northern, to western Louisiana in the south, according to Torrey and Gray's Flora, though I do not find it included in Chapman's Flora of the Southern United States. It is very near the *C. trichosperma* of the same regions, differing chiefly in the

longer teeth of the achenes, though as these are described as sometimes absent in *C. aristosa*, that character will not avail much.

C. aristosa is said to be a swamp plant in America, but it has flourished in the herbaceous ground at Kew, where the soil is anything but moist, attaining a height of three feet; it is described as a biennial, but it is annual here, and flowers in September and October.

Descr. A tall slender annual or biennial, with erect wiry red-brown stems, two to three feet high, quite glabrous, except for a few hairs chiefly towards the bases of the leaves and nodes. *Leaves* opposite, once or twice pinnatisect; the segments five to seven, rather distant, one to three inches long, lanceolate, acuminate, deeply serrate, entire towards the narrowed bases. *Heads* golden-yellow, nearly two inches in diameter, in panicled corymbs; peduncles very slender, wiry, tortuous, with a few small distant simple leaves. *Involucre* of many bracts; outer numerous, leafy, spreading and twisted, linear, obtuse; inner erect with involute margins above the middle. *Ray-flowers* about eight, neuter, with a short tube and large elliptic lanceolate acute flat five-nerved limb. *Disk-flowers* small, tubular. *Style-arms* acute. *Achenes* flattened, broadly oblong, hispid, the margins thickened and produced upwards each into an erect hispid awm as long as the achene (awns sometimes four or wanting, according to descriptions).—*J. D. H.*

Fig. 1, inner involucral bract; 2, scales of receptacle; 3, ray-flower; 4, disk-flower; 5, style-arms; 6, achene:—*all enlarged.*



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Tab. 6463.

GLADIOLUS BRACHYANDRUS.

Native of Zambesi Land.

Nat. Ord. Iridaceæ.—Tribe Gladioleæ.

Genus Gladiolus, *Linn.*; (*Baker in Journ. Linn. Soc.* vol. xvi. p. 170.)

Gladiolus *brachyandrus;* bulbo magno subgloboso tunicis exterioribus brunneis, foliis basalibus 4–5 parvis ensiformibus subcoriaceis venis exsculptis, pedunculo subpedali foliis 1–2 valde reductis prædito, spica subpedali laxe 8–10-floro floribus ascendentibus, spathæ valvis lanceolatis flore subduplo brevioribus, perianthii rubri magnitudine mediocris tubo brevi curvato late infundibulari, segmentis inæqualibus oblongis acutis, superiori majori haud cucullato, lateralibus paulo minoribus, 3 inferioribus multo minoribus, staminibus perianthio triente brevioribus antheris albis, stylo staminibus æquilongo stigmatibus oblongis longe unguiculatis.

It has been ascertained during the last twenty years that there are a considerable number of Gladioli amongst the mountains of Tropical Africa, which are distinct specifically from all the well-known old types of the Cape and Mediterranean region. Dr. Welwitsch found in Angola eleven species, of which ten proved new, and others have been met with in Guinea, Abyssinia, the Upper Nile country, and Zambesi land. The present plant, however, is the first of these Tropical African species that has reached this country alive. It was sent about a couple of years ago to the Edinburgh Botanical Garden from the Shire Highlands by Mr. John Buchanan, along with another less showy species, which also proves to be new. It comes nearest the Natal *G. Ecklonii*, lately figured in the Magazine (tab. 6335), and the old well-known *G. blandus*, but is readily marked at a glance from all its neighbours by its short stamens and very unequal perianth-segments. Our drawing was made from a plant flowered by Mr. Sadler at Edinburgh in the month of July of the present year.

Descr. *Bulb* depresso-globose, about a couple of inches

in diameter, with bright brown outer tunics. Produced *leaves* four or five near the base of the stem, firm in texture, ensiform, green, strongly ribbed and margined, about half an inch broad, the largest not more than two or three inches long. *Peduncle* about a foot long, bearing one or two much-reduced leaves. *Spike* nearly a foot long, consisting of eight or ten distant ascending flowers; spathe-valves lanceolate, membranous at the flowering-time, the outer an inch or more long, the inner rather shorter. *Perianth* bright pale scarlet, two or two and a half inches long; tube curved, openly funnel-shaped, half an inch long; segments all oblong and acute, but very unequal in size, permanently much imbricated, the upper one an inch and a half long by half as broad, not cucullate; the two side ones rather shorter and broader, standing forward in the fully-expanded flower with slightly spreading tips; the three lower ones much smaller, under an inch long. *Stamens* not reaching up more than half the length of the upper segment of the perianth; anthers white, a quarter or a third of an inch long. *Style* half as long as the top segment of the perianth; stigmas oblong, falcate, with long claws.—*J. G. Baker.*

Fig. 1, upper portion of a stamen; 2, upper portion of style, with the three stigmas:—*both enlarged.*

6161.



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H. J. D. Ker del. et lith.

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Tab. 6464.

SCUTELLARIA PURPURASCENS.

Native of South America.

Nat. Ord. Labiatæ.—Tribe Stachydeæ.

Genus Scutellaria, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1201.)

Scutellaria (Heteeantheria) *purpurascens*; erecta, herbacea, puberula pubescens v. patentim pilosa, caulibus ramosis teretibus, foliis longe petiolatis ovato-cordatis subacutis grosse sinuato-dentatis pallide viridibus pubescentibus v. glabratis, floralibus parvis v. minutis deciduis, racemo laxifloro, floribus subsecundis sparsis v. inferioribus oppositis, calycibus pedicello subæquilongis, fructiferis obovato-orbiculatis, corolla pollicari tubo gracili cœruleo, labio superiore fornicato acuto, inferiore obtuse 4-lobo saturate violaceo linea media albida.

S. purpurascens, *Swartz Fl. Ind. Occ.* vol. ii. p. 1013; *Benth. in DC. Prodr.* vol. xii. p. 416.

S. Felisberti, *Nees et Mart. in Nov. Act. Acad. Nat. Cur.* vol. ii. p. 77.

This appears to me to be one of many varieties of a common South American *Scutellaria*, of which the published type is Swartz's *S. purpurascens*, and which has been described under various names from various parts of that continent, according to its pubescence, length of petiole, &c. I have compared Herbarium specimens of what appears to me the same thing from Dominica, Martinique, St. Lucia, St. Vincent's, Trinidad, Guatemala, Venezuela (as *S. meridana*, Moritz), and Costa Rica. It appears in Guiana under the name of *S. uliginosa*, St. Hil., under which name also it extends to Rio de Janeiro and the provinces of St. Paul and St. Catherine. There are further some very nearly allied plants which may prove to be, varieties with petioles much shorter than the leaf, as *S. tubiflora*, Benth., of Brazil; a tomentose Cuban plant named *purpurascens* by Grisebach; and a Mexican one (Orizaba Herb. Bourgeau, No. 2796) with rather larger flowers.

Our plants of *S. purpurascens* were received from Mr.

= Tussacia Jacq.

Portella of Rio de Janeiro, and flowered at Kew in September.

DESCR. Perennial; one to two feet high, herbaceous, pale green, and rather succulent; more or less pubescent, or clothed with spreading hairs; stem branched; branches terete. *Leaves* long-petioled, one and a half to two and a half inches long, broadly ovate-cordate, obtuse or subacute, coarsely sinuate-toothed, sinus at the base deep, the lobes almost overlapping, upper surface with spreading hairs, under finely pubescent or glabrate; petiole one to two and a half inches long, terete, pubescent. *Raceme* one to two inches long; flowers subsecund, alternate, or the lower only opposite; bracts small or minute, green, deciduous, the lower sometimes leafy; pedicels about equalling the calyx, pubescent. *Calyx* one-sixth of an inch long. *Corolla* two-thirds of an inch long; tube slender, slightly compressed, pale blue, hardly dilated upwards, slightly curved; upper lip small, arched, compressed, acute; lower a quarter of an inch in diameter, obtusely 4-lobed, dark violet, with a median broad white band. *Fruiting* calyx obovate-orbicular; shield very concave, deeply cupped, much broader when ripe than represented in the state figured here; nucules subglobose, minutely tubercled, seated on a prominent columnar receptacle.—*J. D. H.*

Figs. 1 and 2, calyx of immature fruit seen from beneath and from above—*enlarged.*



H.T.D. del. J.H Fitch. Lith.

Vincent Brooks Day & Son Imp

Tab. 6465.

LUZURIAGA RADICANS.

Native of Chili.

Nat. Ord. Smilaceæ.—Tribe Philesieæ.

Genus Luzuriaga, *Ruiz et Pav.*; (*Endl. Gen. Pl.* p. 154.)

Luzuriaga *radicans*; glaberrima, caulibus gracilibus ramosis flexuosis angulatis basi radicantibus, foliis distichis ellipticis oblongis lineari-oblongisve acutis v. apiculatis subtus glaucis costatis et 6–12-nerviis, floribus solitariis v. 2–3-nis axillaribus nutantibus, staminibus conniventibus filamento brevi lato crasso, antheris anguste lanceolato-subulatis præfloratione erectis antice dehiscentibus, ovarii placentis 4–5-ovulatis axim non attingentibus.

L. radicans, *Ruiz et Pav. Fl. Peruv. et Chili*, vol. iii. p. 66, t. 298; *Presl. Rel. Haenk.* vol. ii. p. 130; *Hook. et Arn. Bot. Beech Voy.* p. 48; *Baker in Journ. Linn. Soc. Bot.* vol. xiv. p. 573.

A very elegant green-house plant, a native of a considerable extent of the coast of Chili, from the latitude of Valdivia to the Straits of Magellan, and also of the plains of Chiloe. It is usually found in forests, rooting up the mossy trunks of trees. Its roots are used as a substitute for sarsaparilla in its native country, on which account, probably, the authors of the genus named it after a celebrated Spanish physician, Don Ignatio Marie Ruiz de Luzuriaga. According to the collector Bridges, its stems are used for rope-making.

The genus *Luzuriaga* consists of but one species; the *L. erecta* of Kunth being, as originally and rightly described by Sir W. Hooker, a true *Callixene* (C. polyphylla, *Hook. Ic. Pl.* t. 674; *tab. nost.* 5192), differing wholly from *Luzuriaga* in the structure of the anthers, as pointed out, indeed, by its author, and which renders Kunth's subsequently removing it to this genus quite unaccountable. Both these genera are closely allied to *Philesia* (tab. nost. 4738), and to *Lapageria* (tab. 4447), and they together form a group of the *Smilaceæ*, or a separate order of the Smilaceous alliance,

characterized by the one-celled ovary with parietal anatropous ovules, entire style with minute stigma, and berry with subglobose seeds, the testa of which is membranous and white, and the albumen horny. The anthers of both *Luzuriaga* and *Callixene* have been incorrectly described as opening by pores. They dehisce throughout their length; those of *Luzuriaga* are erect, and attached by a broad base to the very short, broad, thick filaments; those of *Callixene* are attached above the free base of the cells to a short slender filament, and are versatile, becoming in *C. polyphylla* reflexed after flowering. *Luzuriaga radicans* has been cultivated for many years in the Royal Gardens, and thrives on stones in the shaded side of the Temperate House, flowering about Midsummer.

Descr. *Stems* very slender, two to three feet high, branching, flexuous, angled, green, with small sheathing persistent brown scales at the nodes. *Leaves* one to two and a half inches long, distichous, rather remote, sessile, twisted at the base, elliptical-oblong or linear-oblong, acute or apiculate, bright green above, glaucous beneath, with three to six pairs of green parallel nerves on each side of the distinct midrib. *Flowers* springing from small imbricating brown persistent bud-scales, solitary, or the peduncle two to three-flowered, drooping; peduncle a quarter to one inch long, slender, bearing one or two small scale-like bracts. *Flower* white, very variable in size, one and a half to two inches in diameter. *Perianth* spreading, segments elliptic or lanceolate, acuminate, the three inner rather larger and thickened along the middle. *Stamens* conniving into a conical column; filaments inserted at the base of the perianth-segments, short, broad, and thick; anther sessile on the broad top of the filament by a broad base which is continuous with the stout connective, subulate-lanceolate, subacute, cells narrow, dehiscing laterally, the valves with inflexed edges. *Ovary* globose; style strict, angular; stigmas three, minute; ovules two seriate on three projecting parietal placentas, anatropous, about five in a row. *Berry* size of a pea, globose, few-seeded.—*J. D. H.*

Fig. 1, front, and 2, back view of anther; 3, ovary; 4, transverse section of ovary; 5, berry:—*all but* 5 *enlarged.*

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Tab. 6466.

SYMPHYTUM peregrinum.

Native of the Caucasus.

Nat. Ord. Boragineæ.—Tribe Borageæ.

Genus Symphytum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 854.)

Symphytum *peregrinum*; caule elato ramoso setis subreversis hispido, foliis inferioribus longe petiolatis elliptico-lanceolatis acuminatis superioribus sessilibus, omnibus molliter hispidis ciliatisque, petiolis decurrentibus, calyce fere ad basin 5-partito segmentis triangulari-lanceolatis sensim acuminatis hispidulis, corolla calyce triplo v. quadruplo longiore, tubo angulato medio constricto supra medium subcampanulato, ore breviter 5-fido, dentibus latis apicibus recurvis, appendicibus antheras subæquantibus.

S. peregrinum, *Ledebour Ind. Sem. Hort. Dorpat.* 1820, p. 4; *Fl. Ross.* vol. iii. p. 114; *DC. Prodr.* vol. x. p. 37; *Briggs in Report of Bot. Exchange Club for* 1877–8, p. 17.

S. asperrimum, *Bab. Fl. Bathon.* 32.

The history of this plant, which is now well known under the erroneous name of *Symphytum asperrimum* (or Prickly Comfrey) is still obscure. That it is not the true *S. asperrimum* of Donn, figured by Sims in this work (t. 929), is obvious from a comparison of that plate, in which the calyx is correctly represented as short, and shortly 5-cleft to the middle only, with obtuse lobes, and which has curved prickles on the stem, arising from conspicuous white tubercles. It agrees well with the character of *S. peregrinum* given in Ledebour, except that the appendages between the stamens are rather shorter (than longer) than the anthers, and the style is not always bent below the top (stylo infra apicem infracto), though it is sometimes so above the middle. From *S. caucasicum* it differs in the stem not being hirsute, nor the leaves softly hoary, and in the calyx being deeply divided. In the Report of the Botanical Exchange Club, cited above (in which work I find the plant for the first time referred, though doubtfully, to *S. peregrinum*), it is suspected to be a garden hybrid between *S. asperrimum* and

S. officinale, which latter is said to be often planted for forage. This may be so, but there is no evidence of its hybridity, and Ledebour gives a habitat for the indigenous *S. peregrinum*, namely, Sawunt in the Talysch province of the Caucasus, at a height of 4000 feet above the sea; and I have seen excellent dried specimens in the Kew Herbarium, collected by Besser (under the erroneous name of *S. caucasicum*, Bieb.), and by Wilhelms, collected in Iberia in 1824, and sent under the name of *S. asperrimum* to the late J. Gay, who has attached to the specimen the note, "Je crois que c'est le *Symphytum caucasicum* M. B. et nullement le *S. asperrimum*." Boissier in his Flora Orientalis (vol. iii. p. 175) indeed says of *S. peregrinum* and another, "formæ hortenses forsan hybridæ." Lastly, for my own part, I see very little reason to regard it as other than a very large form of *S. officinale*, with the stem fistular below, probably originating from cultivation, and not from hybridization.

The specimen here figured flowered in the Royal Gardens from plants of "Prickly Comfrey," presented by Mr. T. Christy, who has been the means of widely diffusing the culture of this *Symphytum* as a fodder plant, under the above name. For some notes of its use as a cattle food I must refer to the "Report of the Progress and Condition of the Royal Gardens during the year 1878," p. 12.—*J. D. H.*

Fig. 1, portion of stem with decurrent petioles—*of the natural size*; 2, calyx; 3, corolla—*enlarged*.



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Tab. 6467.

APHELANDRA PUMILA.

Native of Brazil.

Nat. Ord. Acanthaceæ.—Tribe Justicieæ.

Genus Aphelandra, *Br.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1102.)

Aphelandra *pumila*; acaulis v. caule brevissimo, tenuiter pubescens, foliis confertis terræ sub-appressis oblongis v. ovato-oblongis acutis v. obtusis basi profunde cordatis superne læte viridibus costa nervisque validis interdum purpurascentibus, subtus albescentibus costa nervisque prominentibus, petiolo crasso, spica subsessili amentiforme obtuse 4-angulato breviusculo crasso, bracteis arcte imbricatis obovatis obtusiusculis coriaceis serratis luride fusco-purpurascentibus venosis, bracteolis sepalisque oblongo-lanceolatis acutis, corollæ coccineæ tubo curvo longe exserto, labio superiore porrecto fornicato rostrato, inferiore reflexo lobis lateralibus oblongis obtusis intermedio orbiculari.

A. pumila, *W. Bull's Retail List of New, &c. Plants*, No. 143, 1878, p. 4.

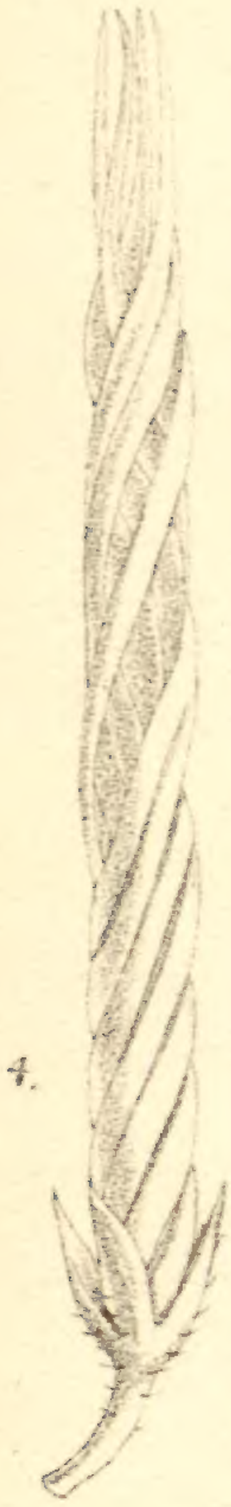
Very dissimilar in habit and stature to any of the numerous species of this beautiful genus that have hitherto been imported into this country, or are contained in our Herbaria. Of these no less than fifty species are known, of which only about a dozen have been in cultivation; and of these again eight are now figured in this work.

A. pumila belongs to the section with large bracts, the upper lip erect, concave, and entire, and the lower divided into three large lobes: it was imported by Mr. Bull from Brazil, and flowered in the Royal Gardens, to which he presented it, during last summer.

Descr. *Stem* very short, giving off many stout petioled leaves, and an inclined shortly-peduncled spike. *Leaves* crowded, horizontally spreading, and lying almost prostrate on the ground, three to five inches long, oblong or ovate-oblong, acute or obtuse, deeply cordate at the base, very convex, finely pubescent upon both surfaces, dark green above, with deeply-impressed green or purplish midrib and nerves, pale green or whitish beneath, with much raised midrib and nerves; petiole very stout, half to

one inch long, pubescent, dull purple. *Spike* three inches long, on a short stout leafy peduncle, formed of closely tetragonally imbricate appressed bracts, three-quarters to one inch long, which are obovate, serrate, subacute, and of a dull brown-purple colour, the lower of them with green foliaceous tips. *Calyx-segments* and bracteoles oblong-lanceolate, acute. *Corolla* much exceeding the bracts, one to one and a quarter inch long, scarlet; tube slender, slightly curved, arched at the top; upper lip arching, beaked, acute, compressed, tip ascending; lower lip sharply reflexed, three-lobed to beyond the middle, lateral lobes broadly oblong obtuse, mid-lobe orbicular. *Ovary* glabrous, on a fleshy disk.—*J. D. H.*

Fig. 1, bracteole; 2, sepal; 3, lower lip; 4, disk and ovary—*all enlarged.*

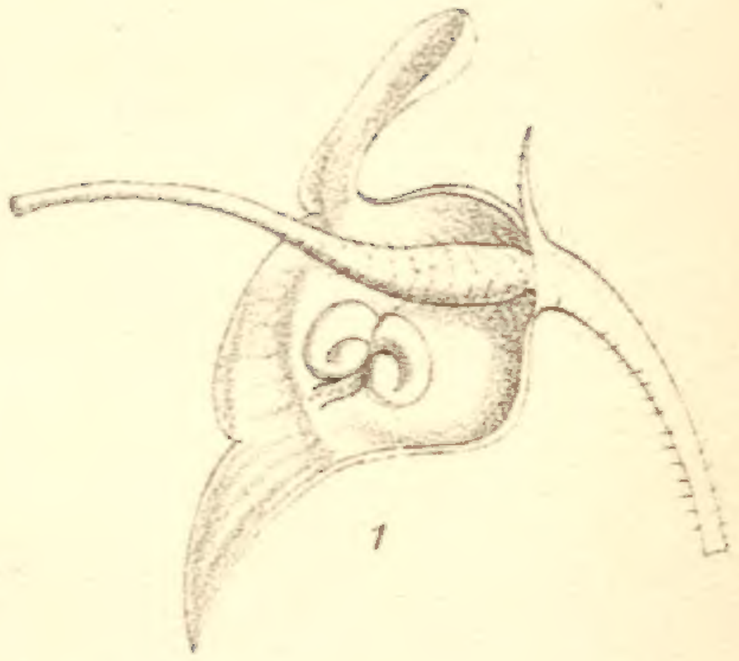


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H.T.D. del. J.N.Fitch Lith.

Vincent Brooks Day & Son Imp

Tab. 6468.

BÆA HYGROMETRICA.

Native of N. China.

Nat. Ord. Gesneraceæ.—Tribe Cyrtandreæ.

Genus Bæa, *Comm.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1023.)

Bæa *hygrometrica;* acaulis, albo-sericea, foliis omnibus radicalibus rosulatis sessilibus orbiculari-ovatis v. -ellipticis crenatis subtus albo-lanatis, scapis gracilibus foliis æquilongis v. longioribus nudis 1-pauci-floris, pedicellis calycibusque patentim pilosis, calycis lobis parvis triangulari-lanceolatis, corollæ tubo ampullaceo, labii superioris lobis 2 orbiculatis, inferioris lobis 3 majoribus oblongis, capsula siliquæformi elongata calyce multoties longiore.

B. hygrometrica, *Brown in Benn. Pl. Jav. Rar.* p. 120; *Deless. Ic. Lel.* vol. v. t. 5.

Dorcocèras hygrometrica, *Bunge Enum. Pl. Chin.* n. 301.

The genus Bæa is an Asiatic one, and its head-quarters are the hilly country of Eastern Bengal, Tenasserim, and Birma, from whence there are seven or eight species, several of them undescribed. One is found as far east as the Philippine Islands, and another in N. Australia, whilst the subject of the present plate occurs a long way to the north of the ordinary range of the genus, namely, in the neighbourhood of Pekin.

The first described species of the genus *B. Commersonii* is even a more distant outlier than any of the above, and though discovered upwards of a century ago, its native country has been only very recently ascertained. For half a century it was claimed by America, and located in the dismal region of Fuegia (Straits of Magellan); for the next half-century it was put down as African, and attributed to the Seychelle Islands, whereas it now proves to be a native of an island in the Western Pacific. The history of its re-discovery in Commerson's habitat is given by Dr. Trimen in the Journal of the Linnean Society (Botany, vol. xv. p. 163, where the name is by a typographical error spelled *Boëa*), and is so curious that I shall transcribe it here. The genus was discovered in 1768 by Commerson, the naturalist to Bougainville's voyage round the world, who in his MSS. proposed for it the generic name *Bæa*, in honour of his brother-in-law, the Rev. Dr. Beau, of Toulon; the species was subsequently described in 1783 by Lamarck, from Commerson's specimens and

manuscripts, under the name of *B. Magellanica*, assuming that Commerson had found it in that remote locality, where, indeed, he had collected largely. Half a century later Robert Brown, having discovered that Commerson's specimens were collected at a place called the Port of Praslin (and the Isles Praslin being the Seychelles), altered the name of *B. Magellanica* to that of *B. Commersonii*, and for the following half-century the Seychelles have been the recognized habitat of the plant. Lastly, in 1875, Baron Mueller sent to Dr. Trimen specimens of a *Bæa* from an island between New Britain and New Ireland, with a request that he would compare it with Commerson's plant. This Dr. Turner did, and finding them to be identical, he took the pains to search for Commerson's Port Praslin, and found that it was actually situated in the very island from which Baron Mueller's specimens were obtained!

Bæa hygrometrica was discovered by the now venerable Dr. Bunge of Dorpat in the mountains near Pekin in 1831, and the specimens here figured were raised from seeds sent to Kew in 1876 from the same locality, by Dr. Bushell, physician to the British Embassy at Pekin. They flowered in August of the present year.

DESCR. Stemless, clothed with soft long hairs that are silky on the upper surface of the leaves, and woolly on the under. *Leaves* all radical, rosulate, two to three inches long, sessile, orbicular-ovate or obovate, or almost trapezoid, obtuse, narrowed and entire towards the base, strongly crenate upwards; nerves deeply impressed above, the three main ones longitudinal and diverging from the base. *Scapes* very slender, hairy, naked, sparingly divided above, few-flowered. *Flowers* pedicelled, nodding, one-half to three-fourths of an inch in diameter. *Calyx* very small, lobes triangular-lanceolate. *Corolla* pale blue with a yellow throat; tube inflated, hemispheric; upper lip of two orbicular lobes, lower with three oblong obtuse lobes, each almost twice as long as one of the upper. *Stamens* two, inserted on the throat of the corolla, filaments very short; anthers broadly reniform, turned inwards and downwards, and meeting by their faces. *Ovary* hairy; style slender, stigma very small. *Capsule* one and a half inch long, slender, pubescent, much twisted to the left, terminated by the slender style.—*J. D. H.*

Fig. 1, section of flower; 2 and 3, front and back view of stamens; 4, capsule:—*all enlarged.*

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6465 Luzuriaga radicans.
6415 Monnina xalapensis.
6405 Nepeta spicata.
6455 Odontoglossum maculatum.
6437 Primula rosea.
6454 Pyschotria jasminiflora.
6450 Rhododendron lepidotum, *var.* obovatum.
6448 Salvia elegans.
6464 Scutellaria purpurascens.
6461 Solanum Torreyi.
6466 Symphytum peregrinum.
6449 Trillium nivale.
6439 Tulipa Schrenki.
6459 Tulipa triphylla.
6407 Veronica longifolia, *var.* subsessilis.
6456 Veronica Lyallii.
6422 Villanova chrysanthemoides.
6420 Villarsia capitata.